



# Technical Findings on the Long-Term Guarantees Assessment

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## Executive Summary

### *The Long-Term Guarantee Package*

The European Insurance and Occupational Pensions Authority (EIOPA) has been requested by the Trialogue parties (the European Parliament, European Commission and Council of the European Union) to assess impacts of the market consistent approach on long-term guarantee products. Solvency II should include regulatory measures to ensure that short-term market movements are appropriately treated with regards to insurance business of a long term nature. In this context, EIOPA has conducted a technical assessment, collecting both qualitative and quantitative information from (re)insurance undertakings and supervisory authorities on the effects of selected regulatory measures.

The Long-Term Guarantees Assessment (LTGA) examines the so-called LTG package – a series of selected regulatory measures aimed at ensuring an appropriate supervisory treatment of long-term guarantee products, also under volatile market conditions. Six LTG measures are covered by this assessment, tested in different combinations through a series of 13 quantitative scenarios and tailored qualitative questions.

- Adaptation to the relevant risk-free term structure or Counter-Cyclical Premium (CCP): Crisis measure to complement market observations when these are determined to be temporarily unreliable or unfit for the prudential purpose, due to spread-related crisis situations in financial markets.
- Extrapolation: Properties of modelling used to value liabilities in order to supplement market observations when reliable market information is no longer available.
- “Classical” Matching Adjustment: Permanent measure providing an adjusted risk-free rate for (re)insurance annuities managed under a strict asset liability matching regime which does result in an immaterial exposure to short-term market volatility.
- Extended Matching Adjustment: The extension of the former measure envisaged to cover business of a long-term nature, but with a lower degree of certainty and predictability of cash flows.
- Transitional: Measure providing a smooth transition to Solvency II for certain long-term guarantees business underwritten under Solvency I economic and prudential conditions, avoiding disruptive events whilst ensuring right incentives.
- Extension of the Recovery Period: Measure to allow for an adjustment of the supervisory reaction to an individual breach of the solvency capital requirements in cases of exceptional falls in financial markets.

Apart from the last measure, the tested LTG package is mainly focussed on quantitative (capital) requirements (Pillar I), though all of those measures will need to be accompanied by suitable elements of risk management, transparency and disclosure (Pillar II and III).



## *Participation and quality of data*

Thanks to the commitment of all parties, national supervisory authorities (NSAs) and industry, a sufficiently representative basis in terms of both qualitative and quantitative information has been collected, thus enabling EIOPA to perform its technical assessment.

## *Main findings*

The outcome of the assessment shows that Solvency II is designed to be risk-sensitive and therefore illustrates a partially significant difference in terms of solvency position at the different reference dates tested. The majority of quantitative analysis is based on year end 2011 (YE11) (re)insurance balance sheets and market conditions. It is important to notice that financial market conditions at YE11 represent an “adverse case” scenario for insurers especially in the Eurozone with the combination of very high spreads in some markets and a low risk-free rate. Since then, market conditions have changed considerably and accordingly the average solvency positions of European insurers have reverted back to more “normal” levels. However, Solvency II is a risk-sensitive framework that has not been designed as a non-zero failure regime and therefore a significant impact of such “adverse case” market conditions on (re)insurers’ solvency positions is expected and intended unlike the current Solvency I framework where YE11 market conditions generally had quite a limited impact on average solvency positions.

Risk-based regulation and supervision provide a more accurate picture of (re)insurance undertakings by not only considering the current situation, but also the implications of future developments. Through market consistent valuation of both assets and liabilities, options and guarantees embedded in insurance contracts are adequately priced, providing undertakings with key inputs for appropriate risk management.

The exercise has identified some suitable adjustments to the framework that will support overcoming regulatory distortions to long-term business triggered by short-term volatility in financial markets. The main outcome of the exercise and technical assessment by EIOPA is listed below. It includes individual observations per tested measure and additional observations relating to the complexity of the LTG package as well as important single market and comparability aspects.

### *Counter-Cyclical Premium (CCP)*

While the tested CCP measure proved to be technically effective in terms of reducing the impact of short-term volatility on own funds of (re)insurers, it has two major draw-backs relating to the broader effectiveness and financial stability implications.

The first major draw-back is that the use of the CCP significantly increases the capital requirements of undertakings in a number of Member States, especially for higher levels of CCP, ultimately resulting in limited or even negative impact on the solvency ratios for those Member States.

The second major draw-back is related to the triggering process which needs to be effective on one hand and not create or deepen financial stability concerns on the other hand. Regarding the effectiveness, a smooth triggering process is vital for the measure to reduce the impact of short-term volatility. If such a process cannot be ensured, the measure could increase rather than decrease the impact of short-term volatility on (re)insurers’ Solvency II balance sheets. It is very questionable whether EIOPA or



National Supervisory Authorities will be able to really activate the application of a crisis measure such as the CCP in certain situations (e.g. sovereign crises). Indeed, this announcement might result in possible severe implications for financial market stability.

Thus, the tested CCP measure involving the given CCP risk methodology and the non-automated triggering does not seem suitable to adequately reduce the impact of short-term volatility in practice and is therefore unlikely to fulfil its overall financial stability aim.

#### *Extrapolation*

EIOPA was asked to test the impact of different convergence speeds being a key input parameter to the Extrapolation approach. Analysis shows that for the Eurozone, a shorter convergence period generally results in more stability of technical provisions. However, compared to applying a longer convergence period and especially in times of high market volatility, this increases the volatility of own funds and thus of solvency ratios.

Another important aspect related to a shorter convergence period is the potential risk of not linking of the extrapolated part from financial market reality. This leads to a number of concerns with respect to the risk management of the undertakings (e.g. misevaluation of options and guarantees or potential risk of investing in shorter term assets to avoid volatility generated by differences between marked-to-market and marked-to-model data) and the consistency between regulatory processes (e.g. with respect to ORSA and internal models). The same could occur with a longer convergence, but generally to a much lesser extent.


Thus, the extrapolation approach for the Euro would benefit from an extension of the convergence period significantly beyond 10, for example 40 years. For other currencies, the characteristics of the local bond and swap markets must be taken into account when determining the appropriate convergence period including special considerations for currencies pegged to the Euro.

#### *“Classical” Matching Adjustment*

The “classical” Matching Adjustment seems to be the most effective tool within the tested LTG package with regards to mitigating short-term volatility from the Solvency II balance sheets of portfolios eligible for the measure. This is due to the portfolio-tailored features of the measure which better reflect the economic reality of the business compared to other measures. However, in order not to risk major policyholder protection concerns and raise wrong risk management incentives, the measure needs be designed with strict conditions to be met, both on the asset and the liability side.

EIOPA was asked to test two different options to the measure which differed in the strictness of the eligibility criteria for investments. The following two criteria were only applied to one of the tested options:

- The amount of credit quality step 3 (CQS 3) assets is limited to 33% of the portfolio (excluding government bonds);
- The matching adjustment for CQS 3 investments is capped at the maximum of CQS 1 or 2.



The quantitative assessment revealed that an exclusion of the two above criteria would significantly increase the amount of business eligible for the “classical” MA. On the other hand, such an approach does raise major concerns on risk management incentives and thus policyholder protection. Undertakings would be incentivised to hold instruments with higher spreads and thus higher default risk.

Further important observations on the functioning of the “classical” MA include:

- The exclusion of immaterial mortality risk from the current measure does not seem to be proportional and reduces the attractiveness of eligible products for consumers;
- In light of policyholder protection, the ring-fencing approach needs to be possible in practice for MA portfolios, e.g. undertakings need to have the possibility to manage the credit quality of MA portfolios in case of risk of downgrade;
- The approach to determining fundamental spread levels of certain types of bonds must be prudent enough under current market conditions;
- With regards to the MA cap for CQS 3 assets, undertakings might implement a broad variety of approaches to determine the cap which will lead to an inconsistent application of the measure across companies and markets;
- No closed list of admissible types of assets should be defined (as was done for the LTGA), but rather suitable conditions in terms of predictability and ability to match liability cash flows;
- The measure is relatively complex to implement and requires an intensive supervisory review process, but undertakings and supervisors in Member States where the measure is currently applicable consider this effort appropriate and supervisable.

Finally, though the applicability of the measure was limited to a number of Member States, EIOPA expects that eligible MA products will emerge in the near future in other Member States.

#### *Extended matching adjustment*

Unlike the “classical” Matching Adjustment, the extended version raises significant concerns in terms of providing false risk management incentives, in particular in terms of credit quality of assets and with regards to the management of liquidity risk. This severely impacts the level of policyholder protection. These concerns are further increased by the high complexity of the measure’s calculations and implementation which would also require an extensive supervisory review process which is not seen as implementable by the majority of supervisors.

Based on clear indications from LTGA participants, the measure would, furthermore, create a competitive disadvantage for small and medium size undertakings as they might not be able to apply the adjustment due to its complexity.

#### *Transitional Measures*

Transitional measures are not primarily aimed at reducing the volatility of the Solvency II balance sheet, but rather at providing a smooth transition between different regulatory regimes which would ultimately lead to more stability in the insurance sector. Therefore, EIOPA believes that transitional measures are important for a smooth transition.



By definition, this approach is aimed at providing a positive effect regarding policyholder protection (reducing risk of companies not being able to afford the transition) and financial stability. But it also comes with certain risks in both areas that, if appropriately designed, can be addressed. Right incentives must be provided (thus transitional measures should be preferred to grandfathering type of provisions) to undertakings and, to ensure policyholder protection a simple and transparent process must be provided, reinforced with an enhanced supervisory review process (SRP). This includes an appropriate length of the period of applicability, and full transparency regarding the consequences of such application.

The transitional tool tested effectively addresses the issue of the technical provisions gap for certain types of businesses with long-term guarantees. The specific design generally limits the application to some Member States where such products are offered or have been offered. However, the general issue of gaps in technical provisions due to the inception of Solvency II will most likely also exist in other Member States for different reasons, e.g. the implementation of the risk margin, revised contract boundaries or differently calibrated market-consistent risk-free rate curves. Also for this a suitable transitional should be found.

A relevant issue to consider is linked to the underlying nature of transitional measures: they should focus on the value of the promise made under Solvency I (technical provisions) and how to align it with the market consistent valuation of Solvency II that adequately prices options and guarantees, therefore not affecting the capital requirements. The way to do it, in EIOPA's view, would be a pure adjustment of eligible own funds which reduces over time.

#### *Extension of the Recovery Period*

The extension of the recovery period (ERP) can be a powerful tool in crisis periods, showing how time can be used, via management and supervisory action, in the benefit of both policyholders and financial stability. At the same time, to ensure right incentives are embedded, time cannot be seen as an excuse to postpone action by undertakings in order to restore the situation. As it is the case within Pillar 2 related action, not only capital but other measures can be part of the agreed way forward.

One difference of this measure compared to the CCP, both being designed as crisis tools, is that it can be applied for different types of financial market crises, i.e. not just spread-related crises. However, it should be noted that the current design (steep fall in financial markets) would probably not provide supervisors with the option to apply it in a low interest rate crisis which is one of the key threats to long-term guarantee business.

The proposed length of the extension (i.e. up to 7 years) should be a maximum. While the duration of liabilities should play a role in activating the measure, the strict and sole link of the granted length of extension to the duration of liabilities seems too simple given the multitude of factors that determines the decision for an application of the measure. Nevertheless, there should be clear conditions linked to the length of application in order to ensure a consistent application across Member States and undertakings.



### *Complexity*

The tested LTG package has shown to be highly complex for undertakings and supervisors to implement for this assessment. This complexity is caused by several factors, most notably the number of measures tested, their interaction, the amount of undertaking-specific elements, and the complex technical approaches to calculating the impact of Pillar 1 measures.

Regarding the latter, all tested LTG measures which involve an adjustment to the risk-free rate (apart from the extrapolation) require the undertakings to calculate an economic balance sheet and capital requirements with the adjustments to the risk-free rate. Once the framework is in place, undertakings would additionally need to do these calculations for the unadjusted rate as well for disclosure purposes. This results in a specifically high effort and complexity if more than one of these measures apply within an undertaking.

For the LTGA, therefore, undertakings theoretically needed to perform separate balance sheet and capital requirement calculations for each scenario and within each scenario for each of the measures applied. While this is useful and relatively straight forward for ring-fenced portfolios that apply the MA, it seems less so for the CCP and transitional measures. Risk-free rate adjustments relating to both these measures do not directly reflect the economic reality of the undertaking or portfolio in question. It is therefore questionable whether the very complex approach to determine the impact of these measures is proportionate and adds value.

### *Single market and consistency*

Several measures in the tested LTG package represent Member State options and explicitly excluded cross-border business from their application. Furthermore, non-life and reinsurance business is explicitly excluded from the application of selected measures, e.g. the MA.

These exclusions do not seem to be based on technical or prudential reasons where the application conditions are otherwise met.

### ***Technical advice by EIOPA***

#### *General principles to the package*

The final LTG package to be included in the Solvency II framework should fulfil a number of principles in order to ensure a high degree of policyholder protection as well as effective supervisory processes. Those principles include:


- Alignment with the SII framework and the economic balance sheet concept;
- Full transparency and comparability;
- Efficient linking of all three Pillars;
- Proportionality and simplicity;
- Adequate treatment of transitional issues.

#### *Way forward*

Based on the conducted assessment and the outlined principles, EIOPA would like to present the following advice with regards to the regulatory LTG measures to be included in the Solvency II framework:



- Counter-Cyclical Premium: Based on the outlined concerns relating to the effectiveness of this crisis measure and to potential financial stability considerations, EIOPA advises to replace the CCP with a predictable volatility adjustment mechanism. Further details on this proposal are given below.
- Extrapolation: Based on the outlined considerations relating to the effectiveness and implications for risk management as well as regulatory processes, EIOPA advises to select a convergence period that is significantly longer than 10 years (e.g. 40 years) for the Euro. For other currencies, however, the characteristics of the local bond and swap markets must be taken into account. Furthermore, in order to reduce potential unwanted consequences of the parameter choice for extrapolation, dedicated Pillar 2 measures such as sensitivity analysis should be applied.
- “Classical” Matching Adjustment: Based on the outlined considerations relating to risk management incentives and policyholder protection, EIOPA advises to implement the “classical” MA as foreseen by the legislators, including the strict criteria relating to CQS 3 investments (i.e. the 33% portfolio limit excluding government bonds and the MA cap). Furthermore, EIOPA suggests the following amendments to the measure:
  - (1) the inclusion of immaterial mortality risk;
  - (2) the ability to manage the credit quality of the asset portfolio in case of risk of downgrade;
  - (3) maximum levels of MA for CQS 3 investment to be provided by EIOPA;
  - (4) EIOPA shall provide with appropriate criteria and conditions via guidelines to deal with “cliff effect situations” related to necessary requirements set in terms of assets quality.
- Extended Matching Adjustment: Based on the outlined major concerns with regards to policyholder protection, competition and supervisability, EIOPA advises to exclude the Extended Matching Adjustment from the LTG package.
- Transitional measures: Based on the outlined observations, EIOPA advises to implement transitional measures as part of the LTG package. In order to make these measures available for a broader application, EIOPA also advises to complement the tested measure with a second measure that is able to address further issues also related to the different valuation of technical provisions under Solvency I versus Solvency II. Both approaches follow the principles defined by EIOPA and need to be accompanied by strong supervisory review elements.
- Extension of the Recovery Period: Based on the outlined considerations, EIOPA advises to implement the Extension of the Recovery Period, under criteria set by EIOPA. However, the strict and sole link of the length of extension to the duration of liabilities seems too simple given the multitude of factors that determine the decision for the application of the measure. Furthermore, the proposed maximum length of extension needs further review, but should not go beyond the currently proposed 7 years. EIOPA also advises to consider a broadening of the triggers to the measure which would enable an application in crisis situations that are not directly linked to a steep fall in financial markets, e.g. low interest rate crisis or



even a combination of major insurance risk events. The measure needs to be accompanied by a supervisory process that closely tracks progress on recovery plans. Finally, the interaction with other LTG measures needs to be clearly defined once the LTG package is final.

- Complexity: Based on the observations relating to the technical complexity of calculating the impact of risk-free rate adjustments, EIOPA advises to implement a more simple approach which solely adds a “Special” Own Funds item to the economic balance sheet for adjustments not directly reflecting the economic reality of the undertaking or portfolio. Apart from this item, the economic balance sheet does remain unchanged from the calculation with the non-adjusted rate and the capital requirements would equally remain unchanged. Section 9.11 provides further details on the proposed OF adjustment approach.
- Single market and consistency: Based on the observations regarding the inconsistent application of certain LTG measures across the EU, EIOPA advises not to link the LTG measures to Member State options and to not exclude cross-border business from any measure (apart from the exceptional national top-up to the Volatility Balancer). Furthermore, the principle of substance over form should be fully incorporated in the LTG package, i.e. the legal type of business should not be an eligibility criteria for any LTG measure.

Finally, EIOPA fully supports to publicly disclose the impact of all LTG measures on the solvency position of individual undertakings after the implementation of the package. For the extrapolation, were a disclosure of impact seems less useful, this should be replaced by the results of sensitivity analyses<sup>1</sup>.

It should also be noted that a precondition for the appropriate functioning of the entire package is the proper interaction of all three pillars, with a strong coordination at EU level. A clear understanding of the consequences in the management of the business is requested, and there should be room for action at supervisory level in terms of Pillar 2.

#### *Highlights of the proposed Volatility Balancer*

EIOPA advises to replace the CCP with a predictable volatility adjustment mechanism. The proposed measure named “Volatility Balancer” would be based on the following premises:

- It would be designed to deal in a predictable and permanent way with the unintended consequences of volatility;
- It would be simple, supervisable and comparable, applicable to all insurance business except unit-linked (and unless the business applies MA);
- It would be calculated as a predictable adjustment to the relevant risk-free rate, usually calculated at a currency level to deal with competition distortions within the single market, but with a national top-up in exceptional market circumstances;
- It would affect own funds only via the introduction of a “Special” Own Funds item;

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<sup>1</sup> This does not give rise to new Pillar 2 requirements, but can be incorporated as part of the sensitivity analyses required in the existing Pillar 2 framework.



- It would be reviewed after a given period of time in line with the remainder of the LTG package (currently foreseen after 7 years);
- It might turn negative under certain conditions; however, this will depend on the final calibrations of the device.

In more detail, the Volatility Balancer (VB) would function as follows:

- A currency-specific reference portfolio (e.g. as obtained for the CCP in the context of the LTGA) would be used as basis to determine the spread difference to the relevant risk-free rate less the portion related to default risk;
- In exceptional circumstances, this adjustment may not reflect the reality of a given market. Should this be the case, e.g. the spread of a national reference portfolio would exceed two times the spread of the currency specific reference portfolio and this national spread is at least 100 bps, the spread would be additionally adjusted for that market by adding the amount that the national spread exceeds two times the currency spread (i.e. if the currency spread is 80 bps and the national spread is 200 bps, the spread would be adjusted to 80 bps +  $(200 - 2 \cdot 80)$  bps = 120 bps. This additional adjustment would then be applicable to national business only to avoid competition advantages in cross border operations;
- The calculated spread (already excluding the portion linked to default risk) would need to be adjusted to account for risk associated with the implementation of the adjustment, i.e. there will not be a full application of the determined spread, but only a 20% application;
- The impact of the measure would be determined using the own funds adjustment approach.

The above calibration of the tool should be seen as a reference calibration. Further analysis needs to go into final calibrations of the approach.

Further insights on the Volatility Balancer concept as well as rationales for the reference calibration are contained in Section 9.11. In addition, Section 10.1 provides an impact analysis with regards to the Volatility Balancer and the proposed reference calibrations for all Member States that have participated in the LTGA.



# 1. Introduction and background

## 1.1. Background

### *Solvency II*

Any regulatory framework should be consistent with the nature of the regulated business. The recent financial crisis has demonstrated that the (re)insurance business, which is about taking risks, mutualising risks, managing risks and making a profit out of this, demands a risk-based approach to regulation. This regulation should provide the right incentives for undertakings to manage their risks and enhance transparency, whilst ensuring the right level of protection to policyholders.

Insurance business is about making promises (offering contracts to policyholders that are in line with their needs) and, most importantly, fulfilling the promises, which therefore need to be sustainable.

Solvency II is a regulatory project that aims at implementing an economic and risk-based supervisory framework in the field of (re)insurance. The framework is built upon three pillars, all equally relevant, that provide for quantitative requirements (Pillar 1), qualitative requirements (Pillar 2) and enhanced transparency and disclosure (Pillar 3). The pillars should be understood in close interaction with each other.

The starting point in Solvency II is the economic valuation of the whole balance sheet, where all assets and liabilities shall be valued according to market consistent principles. As a result of this total balance sheet approach, any adjustment made to one of the balance sheet items will affect the overall solvency position of the undertaking. The market consistent approach built into Solvency II will allow for comparing and disclosing the elements of the balance sheet in a harmonised manner, with a positive impact in terms of understanding and trust.

The expected value of the insurance promises is measured by the technical provisions, which reflect the expected cost of the obligations of the undertaking towards the policyholder, calculated through a best estimate and a risk margin. In order to ensure the right valuation of the obligations, discounting liabilities at a risk-free rate has been chosen to appropriately price options and guarantees embedded in the contract.

Undertakings will have to hold sufficient financial resources to absorb unexpected losses and to cover the risks inherent to the (re)insurance business: basic own funds (excess of assets over liabilities) and ancillary own funds (that may be called to absorb losses) will be classified into three tiers depending on their permanent availability and their subordination, ensuring that most resources are of the highest quality.

Capital requirements are put on top of the technical provisions in order to cover unexpected losses, with a given confidence level of 99.5 % over a one-year time horizon. A supervisory ladder of intervention is embedded in the system, via the setting-up of two layers of capital, the Minimum Capital Requirement (MCR), which triggers ultimate supervisory action, and the Solvency Capital Requirement (SCR).



Appropriate risk management requirements and incentives are included in the Solvency II framework, allowing for a tailored approach to the risk profile of each undertaking, which promotes opportunities and fosters sustainability of the business. The recognition of diversification benefits and the use of internal models are examples of this.

Since the Solvency II project started more than 10 years ago, a number of things have happened, in particular as a direct consequence of the recent crisis, that raise three relevant questions:

- What makes Solvency II the right way forward?
- Should Solvency II be fine-tuned in any way to ensure that lessons from this time period are rightly factored in?
- May Solvency II affect the availability of products offered to consumers?

Firstly, rather than putting into question the validity of the project, the crisis has underlined the urgent need for Solvency II and its robust design, acknowledged by external parties to the project including the International Monetary Fund (IMF) in its review of the European System of Financial Supervision. It will not be perfect from day one, but it contains the right elements to be a much needed upgrade compared to the current Solvency I system, outdated in a number of elements.

Furthermore, the crisis has highlighted an important element that needs to be addressed: volatility and its consequences. It is EIOPA's view that volatility is a fact, which is shown by market consistent valuation, and should be an integral part of the risk management of companies, both as a risk and a potential business opportunity. At the same time, if not appropriately understood, it may lead to "artificial" - in the sense of unnecessary - consequences or actions, including supervisory action, which should be avoided, in particular regarding short-term volatility. The simultaneous application of the three pillars of Solvency II will allow dealing with undesirable impacts and procyclicality.

Finally, the interaction of the three pillars of Solvency II is of crucial importance. Market consistent valuation puts a price to all options and guarantees embedded in the (re)insurance products and provides management of undertakings with information on the economic costs embedded in a product. Through sound risk management, (re)insurers should make the best use of such information, and focus on those guarantees that provide value to policyholders, ensuring the right balance between economic cost and consumer willingness to pay the price, thus increasing the value of the undertaking, ensuring the future sustainability of the business and, ultimately, consumer protection. Through enhanced disclosure, stakeholders will reward such behaviour. This is particularly important in the current low interest rate scenario faced by many European players.

This sets the background for the request that has been made to EIOPA to assess a number of measures designed to avoid undesirable impacts in the treatments of insurance business with long-term guarantees, ensuring that such measures function effectively in light of the principles of the internal market and ensure a level playing field across the Union: the LTG Package.



### *Omnibus II process*

In the context of the Omnibus II negotiations, Trialogue parties considered that Solvency II should include regulatory measures for insurance products with long-term guarantees that may be affected by so-called “artificial volatility”.

For this, the Trialogue parties have proposed a package of measures and in July 2012, Trialogue parties agreed that the impact of the package of long-term guarantees measures (“the LTG package”) should be evaluated to assess the effects that the implementation of the package will have. EIOPA has been requested to run this assessment.

### *Terms of Reference to the LTGA*

The exact terms and conditions of the Long-Term Guarantees Assessment (LTGA) have been laid out in the “Terms of Reference” (ToR) agreed by Trialogue parties on 14 December 2012.

The ToR specified the scope of the assessment with regards to

- General objectives (see section 1.3 for details)
- Market coverage and composition of the sample (see section 1.5 for details)
- Measures and quantitative scenarios tested (see below for details)
- Outputs to be provided including additional analysis required by EIOPA
- Qualitative questions to participants
- Procedure and timelines (see below for details)

### *Measures and quantitative scenarios tested*

The following LTG measures have been tested during the LTGA:

- Adapted relevant risk-free interest rate term structure (also known as the Counter-cyclical Premium or “CCP”) – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 77a
- Extrapolation – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 77b
- Matching adjustment for certain life insurance obligations (also known as the “Classical” Matching Adjustment or “MA”) – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 77c
- Matching adjustment for certain insurance obligations not covered by Article 77c (also known as the “Extended” Matching Adjustment or “EMA”) – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 77e
- Transitional measures – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 308b
- Extension of recovery period (or “ERP”, not subject to quantitative assessment) – this measure is described in the non-public Omnibus 2 draft text as of 9 July 2012 in Article 138(4)

The following scenarios have been designed by Trialogue parties to be tested in the quantitative assessment:

|            | 0  | Scenarios at the reference date YE11 |   |   |   |   |   |   |   |   | Scenarios at historic reference dates |    |    |   |
|------------|--|--------------------------------------|---|---|---|---|---|---|---|---|---------------------------------------|----|----|---|
|            |  | 1                                    | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10                                    | 11 | 12 |   |
| <b>I</b>   | <b>Adapted relevant risk-free interest rate term structure (CCP)</b> |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | No CCP   | x                                    |   |   |   |   |   |   |   |   |                                       |    | x  | x |
| B          | CCP of 100bps  |                                      | x |   |   | x | x | x | x | x | x                                     | x  |    |   |
| C          | CCP of 50bps   |                                      |   | x |   |   |   |   |   |   |                                       |    |    |   |
| D          | CCP of 250 bps   |                                      |   |   | x |   |   |   |   |   |                                       |    |    |   |
| <b>II</b>  | <b>Extrapolation</b>   |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | LLP 30yrs for EUR, 40 yr convergence                                 | x                                    |   |   |   |   |   |   |   |   |                                       |    |    |   |
| B          | LLP 20yrs for EUR, 40 yr convergence                                 |                                      |   |   |   | x |   |   |   |   |                                       |    |    |   |
| C          | LLP 20yrs for EUR, 10 yr convergence                                 |                                      | x | x | x | x |   | x | x | x | x                                     | x  | x  | x |
| <b>III</b> | <b>Classical Matching adjustment</b>                                 |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | No Matching Adjustment   | x                                    |   |   |   |   |   |   |   |   |                                       |    |    |   |
| B          | Classic Standard version   |                                      | x | x | x |   | x | x | x | x | x                                     | x  | x  | x |
| C          | Classic Alternative version  |                                      |   |   |   | x |   |   |   |   |                                       |    |    |   |
| <b>IV</b>  | <b>Extended Matching adjustment</b>                                  |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | No Matching Adjustment   | x                                    |   |   |   |   |   |   |   | x | x                                     |    | x  |   |
| B          | "Extended" Standard I version  |                                      | x | x | x | x | x |   |   |   |                                       | x  |    | x |
| C          | "Extended" Standard II version                                       |                                      |   |   |   |   |   |   | x |   |                                       |    |    |   |
| D          | "Extended" Alternative version                                       |                                      |   |   |   |   |   | x |   |   |                                       |    |    |   |
| <b>V</b>   | <b>Transitional Measures</b>   |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | No transitional measure  | x                                    | x | x | x | x | x | x | x |   |                                       | x  |    | x |
| B          | Transitional measure applied to all existing business                |                                      |   |   |   |   |   |   |   | x |                                       |    | x  |   |
| C          | Transitional measure applied to paid in premiums only                |                                      |   |   |   |   |   |   |   |   | x                                     |    |    |   |
| <b>VI</b>  | <b>Reference date</b>  |                                      |   |   |   |   |   |   |   |   |                                       |    |    |   |
| A          | 31 December 2011 (YE11)  | x                                    | x | x | x | x | x | x | x | x | x                                     |    |    |   |
| B          | 31 December 2009 (YE09)  |                                      |   |   |   |   |   |   |   |   |                                       | x  |    |   |
| C          | 31 December 2004 (YE04)  |                                      |   |   |   |   |   |   |   |   |                                       |    | x  | x |

TABLE 1: SCENARIOS TESTED IN THE QUANTITATIVE PART OF THE LTGA

These scenarios are shown for information purposes. Throughout the report, there are references to these scenarios, but EIOPA has tried to present all results in a way that is comprehensive to readers not familiar with the scenarios.

It should be noted that for scenarios at historic reference dates, only financial market inputs were adapted, but balance sheet composition of participating (re)insurers were kept at YE11 levels to ensure comparability and reduce complexity.

### Timelines

EIOPA launched the LTGA on 28 January 2013. Participating (re)insurance undertakings had 9 weeks to complete the qualitative and quantitative part of the assessment. Following validation, analysis and the drafting of the report by NSAs and EIOPA, this report was submitted to Trialogue parties on 14 June 2013.

## 1.2. Disclaimer


### Sources of comments in this report

This report is based on inputs received during the Long-Term Guarantee Assessment from the industry and NSAs as well as expert views and additional analyses by EIOPA with the support of ESRB.

In the discussion parts of the report we identify the main views and arguments expressed by LTGA participants. At the end of each main section we identify "EIOPA's main observations and technical advice".

### "Adverse case" scenario YE11

The report contains a number of qualitative and quantitative analyses. The majority of quantitative analysis is based on YE11 (re)insurance balance sheets and market conditions. It is important to note that financial market conditions at YE11 represent an "adverse case" scenario for (re)insurers especially in the Eurozone with the combination



of very high spreads in some markets and a low risk-free rate. Since then, market conditions have changed considerably and accordingly the average solvency positions of European insurers have reverted back to more “normal” levels. However, Solvency II is a risk-sensitive framework and therefore a significant impact of such adverse market conditions on (re)insurers’ solvency positions is expected and intended. This is not generally the case under the current Solvency I framework where YE11 market conditions had a quite limited impact on average solvency positions.

Furthermore, when analysing the LTGA results it should be noted many undertakings have not yet optimised their solvency positions based on the Solvency II framework, but rather based on the current regulatory regime.

#### ***Representativeness and quality of data***

It should be stressed that all quantitative analysis presented in this report is based on data provided by LTGA industry participants. EIOPA and NSAs put a lot of emphasis on high participation rates and the need to have representative samples for this exercise.

It should be noted that the short timelines of this exercise, the overlap with the year-end accounting processes and the complexity of the tested package are expected to have impacted on the quality of data provided by participants. Furthermore, EIOPA’s technical specifications allowed for certain simplifications. A number of inconsistencies and errors have been eliminated, during the validation process performed by NSAs and EIOPA, but some quality issues might remain given the tight timeline.

Nevertheless, all quantitative results presented in this report were checked by EIOPA, and EIOPA is confident that overall conclusions drawn are reliable and representative for discussions by the Trialogue parties.

#### ***Segregation of single measure effects***

Looking at the impact of certain LTG measures tested, it should also be noted that the LTGA scenarios were designed in a way that in some cases the quantitative impact of single LTG measures could not be determined from data provided by participants. In these cases, EIOPA needed to apply high-level assumptions to derive conclusions on the impact of single measures. These assumptions are clearly highlighted throughout the report.

#### ***Focus on solo undertakings and standard formula***

The exercise was focussed on the impact of the LTGA package on individual (“solo”) (re)insurance undertakings. The report does however provide qualitative insights on the impact of LTG measures on groups and their supervision in some sections.

Finally, quantitative results relating to solvency positions displayed in this report are based on the standard formula (SF) approach only. Internal model (IM) use was allowed for as an optional add-on for the LTGA submissions. However, only very few participants provided IM results besides the SF results.

### **1.3. Objectives**

Based on the Terms of Reference, the LTGA has the following objectives:



- to assess, first and foremost, the impact of the proposed LTG package on policyholder protection;
- to assess whether the proposed LTG package will allow supervisory authorities to supervise insurance and reinsurance undertakings and insurance and reinsurance groups efficiently and effectively;
- to assess whether the proposed system can be implemented efficiently and effectively by all insurance and reinsurance undertakings and the cost of implementation;
- to assess whether the proposed system provides the right incentives for good risk management and wide risk diversification and contributes to the correct risk reflection of the undertakings;
- to assess, in cooperation with ESRB (European Systemic Risk Board), the impact on financial stability and whether the proposed system has the potential to create systemic risks;
- to assess the impact of the proposed LTG package on the single market including cross-border business;
- to assess the impact of the proposed LTG package on insurance and reinsurance undertakings' solvency position and also possible competition distortions in national markets and the single market;
- to assess the impact of the proposed LTG package on long-term investments by insurance and reinsurance undertakings.

This report assesses each long-term guarantee measure that is part of LTG package and a combination of those using the listed objectives. The sections relating to each of the LTG measures and to the overall package are therefore all structured in the same way along those objectives.

## 1.4. Analysis Framework

This section sets out the framework that has been applied by EIOPA to analyse the LTGA package in the light of ToR objectives and to derive the conclusions. For each of the objectives, EIOPA has specified the key questions that need to be answered in order to assess the impact of the LTG measures:

### *Impact on policyholder protection*

1. Does the application of the measure result in a realistic view on the ability of insurers to fulfill their obligations towards the policyholders?
2. Is the impact of the measure sufficiently transparent to policyholders?

### *Impact on effective and efficient supervision*

1. Is the implementation of the measure transparent to the supervisor and thus causes no major challenges for the supervisory review process?
2. Does the measure enable supervisors to provide a sound supervisory judgment?
3. Does the measure give room for an inconsistent application across member states?

### *Implementation effort*

1. How significant are the implementation efforts for the insurance industry? Does this differ for smaller vs. larger undertakings?
2. How significant are the implementation efforts for NSAs?
3. How significant are the implementation efforts for EIOPA?



### *Incentives for good risk management*

1. Does the implementation of the measure result in a proper reflection of risk?
2. Does the measure lead to proper risk management behaviour in the industry and wide risk diversification? (e.g. ALM)
3. Is the measure sufficiently transparent to undertakings, so business decisions can be taken in line with good risk management incentives?

### *Impact on financial stability and prevention of systemic risks*

1. Might the measure have an impact on the investment behaviour of undertakings that might ultimately result in a financial stability issue/ systemic risk?
2. Might the implementation of the measure result in systemic risk due to other effects (e.g. cliff edge effect due to exit, etc.)?

### *Impact on insurance and reinsurance undertakings' solvency position*

1. What is the impact on all undertakings?
2. What is the impact on undertakings by size?
3. What is the impact on undertakings by type?
4. What is the impact on Groups?
5. Does the measure result in special effects on individual markets?
6. Does the measure result in an unfair treatment of cross-border business?
7. Does the measure result in a reduction of volatility of the Solvency II balance sheet?

### *Impact on competition*

1. What is the overall impact of the measure on the solvency position? Does this differ for smaller vs. larger undertakings?
2. Are distortions in competition to be expected from the implementation of the measure, especially also with regards to certain member state options?

### *Impact on Long-Term Investments*

1. Does the measure have an impact on the LTI behaviour?

### *Other considerations*

1. Will the implementation of the measure negatively impact the general availability of long-term insurance products for future policyholders?
2. Is the measure addressing the actual issue, i.e. is the measure effective?
3. What is the impact on accounting?
4. What are the cross-sectoral implications?
5. What are the reputational risks for the framework and involved stakeholders?
6. What are consequences of implementing the measure for Pillar 2 and 3 of the Solvency II framework?

## **1.5. Participation/ Coverage**

Following the Terms of Reference, the LTGA should be based on a representative sample of individual undertakings selected by national supervisory authorities, in collaboration with EIOPA, and based on the following criteria:

- the sample consists of individual insurance and reinsurance undertakings;



- for each Member State the sample is representative of the national market, in particular in relation to the nature, size and complexity<sup>2</sup> of undertakings; the sample should also be representative in relation to the insurers that are affected by the proposed long-term guarantee measures;
- in relation to life business, the sample should cover at least 50% of the market of each Member State, calculated according to technical provisions (TP);
- in relation to non-life business, the sample should cover at least 20% of the market of each Member State, calculated according to gross written premiums (GWP)<sup>3</sup>, and should in particular capture non-life obligations most affected by the proposed LTG package<sup>4</sup>;
- the sample allows separate results to be derived for different national markets, and for undertakings of different nature, size and complexity.

EIOPA interpreted the coverage targets as follows:

- in relation to life business, the 50% coverage should relate to the most affected life business estimated by all life TP excluding unit-linked business.
- in relation to non-life business, the 20% target should relate to the most affected non-life business estimated by non-life annuity TP.

The below table provides an overview of actual market coverage for the different participating Member States.

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<sup>2</sup> In particular the sample should be representative in relation to the type of undertaking (life insurance undertaking, non-life insurance undertaking, reinsurance undertaking) and the market concentration.

<sup>3</sup> To the extent practicable, EIOPA had the possibility to replace this volume measure by the technical provisions, possibly restricted to those technical provisions that cover liabilities with an average duration longer than a specified threshold.

<sup>4</sup> Including annuities stemming from non-life insurance business (e.g. workers' compensation) and health insurance similar to life insurance business.

| Market coverage (all business) |            |            |
|--------------------------------|------------|------------|
| Country                        | L          | NL         |
| AT                             | 87%        | 47%        |
| BE                             | 71%        | 64%        |
| BG                             | 55%        | 0%         |
| CY                             | 80%        | 48%        |
| DE                             | 78%        | 49%        |
| DK                             | 45%        | 35%        |
| EE                             | 79%        | 0%         |
| ES                             | 61%        | 52%        |
| FI                             | 84%        | 72%        |
| FR                             | 66%        | 32%        |
| GR                             | 93%        | 49%        |
| HU                             | 47%        | 72%        |
| IE                             | 30%        | 7%         |
| IT                             | 66%        | 55%        |
| LI                             | 43%        | 0%         |
| LT                             | 97%        | 0%         |
| LU                             | 34%        | 0%         |
| MT                             | 29%        | 0%         |
| NL                             | 88%        | 51%        |
| NO                             | 82%        | 42%        |
| PL                             | 87%        | 72%        |
| PT                             | 95%        | 93%        |
| RO                             | 60%        | 33%        |
| SE                             | 63%        | 46%        |
| SI                             | 64%        | 49%        |
| SK                             | 83%        | 0%         |
| UK                             | 38%        | 0%         |
| <b>Total</b>                   | <b>59%</b> | <b>25%</b> |

| Market coverage (LTG relevant business) |            |            |
|---|------------|------------|
| Country                                 | L          | NL         |
| AT                                      | 83%        | n/a        |
| BE                                      | 70%        | 85%        |
| BG                                      | 57%        | 0%         |
| CY                                      | 88%        | n/a        |
| DE                                      | 79%        | 28%        |
| DK                                      | 53%        | 35%        |
| EE                                      | 94%        | 0%         |
| ES                                      | 63%        | n/a        |
| FI                                      | 80%        | 68%        |
| FR                                      | 66%        | 53%        |
| GR                                      | 91%        | n/a        |
| HU                                      | 51%        | 39%        |
| IE                                      | 56%        | 50%        |
| IT                                      | 71%        | n/a        |
| LI                                      | 68%        | 0%         |
| LT                                      | 97%        | 0%         |
| LU                                      | 62%        | 0%         |
| MT                                      | 100%       | 0%         |
| NL                                      | 87%        | n/a        |
| NO                                      | 85%        | n/a        |
| PL                                      | 88%        | 71%        |
| PT                                      | 92%        | 97%        |
| RO                                      | 50%        | n/a        |
| SE                                      | 64%        | n/a        |
| SI                                      | 67%        | n/a        |
| SK                                      | 89%        | 0%         |
| UK                                      | 65%        | 0%         |
| <b>Total</b>                            | <b>70%</b> | <b>n/a</b> |

**TABLE 2: MARKET COVERAGE BY MEMBER STATE FOR ALL BUSINESS AND FOR LTG-RELEVANT BUSINESS ONLY SPLIT INTO LIFE (L) AND NON-LIFE (NL)**

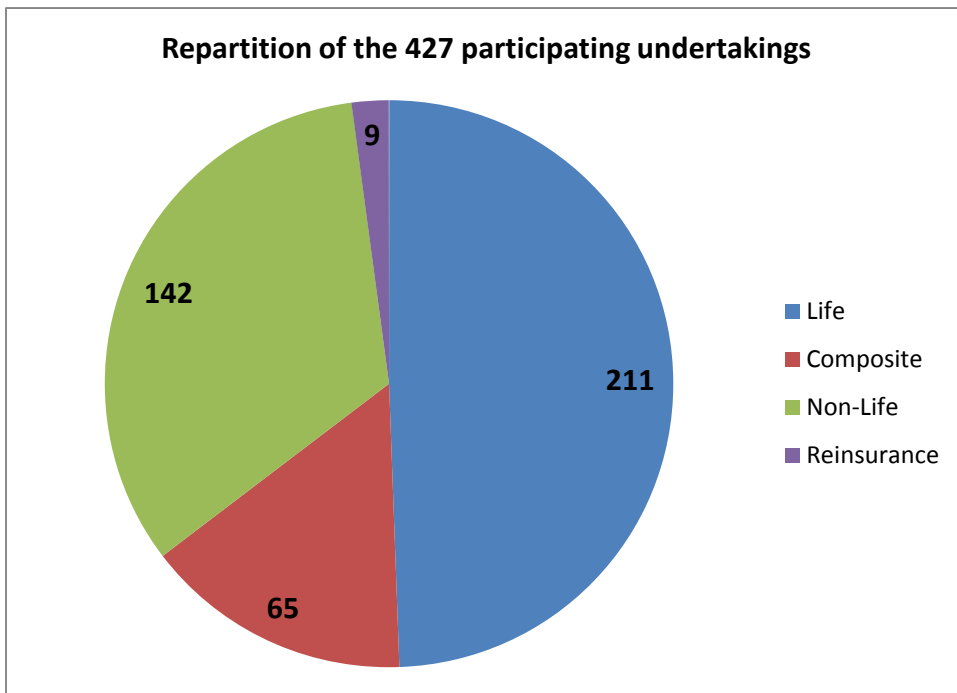
All listed Member States fulfilled the 50% life coverage target for the LTG relevant business. Average life market coverage across participating Member States is 59% relating to all life business and 70% relating to LTG relevant business (weighted by TP).

Regarding non-life coverage, a number of NSAs decided not to include non-life undertakings in the LTGA sample as LTG-relevant non-life business is either insignificant or non-existent in their markets. All Member States that have non-life businesses participating in the exercise did fulfil the 20% TP target for LTG-relevant non-life business though in some cases the exact split of TP into the LTG-relevant and non-relevant part was not possible (marked with "n/a" in the table above). Average non-life market coverage across participating Member States is 25% relating to all non-life business (weighted by TP).

Results for the following Member States are not presented in this report:

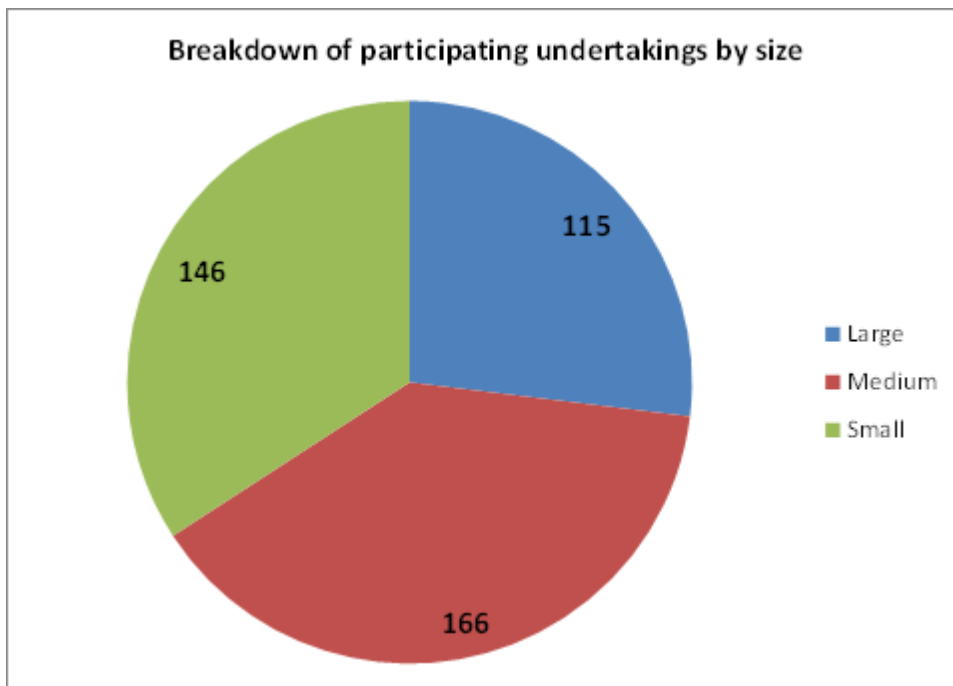
- Czech Republic: Only one undertaking provided results to the Czech supervisory authority. For confidentiality reasons, the respective industry input is therefore not included in this report. However, qualitative inputs by the NSA are included.
- Latvia/ Iceland: The life insurance market is very small and LTG business is insignificant.

Further acceding and candidate countries did not participate.



**FIGURE 1: PARTICIPATING UNDERTAKINGS BY TYPE**

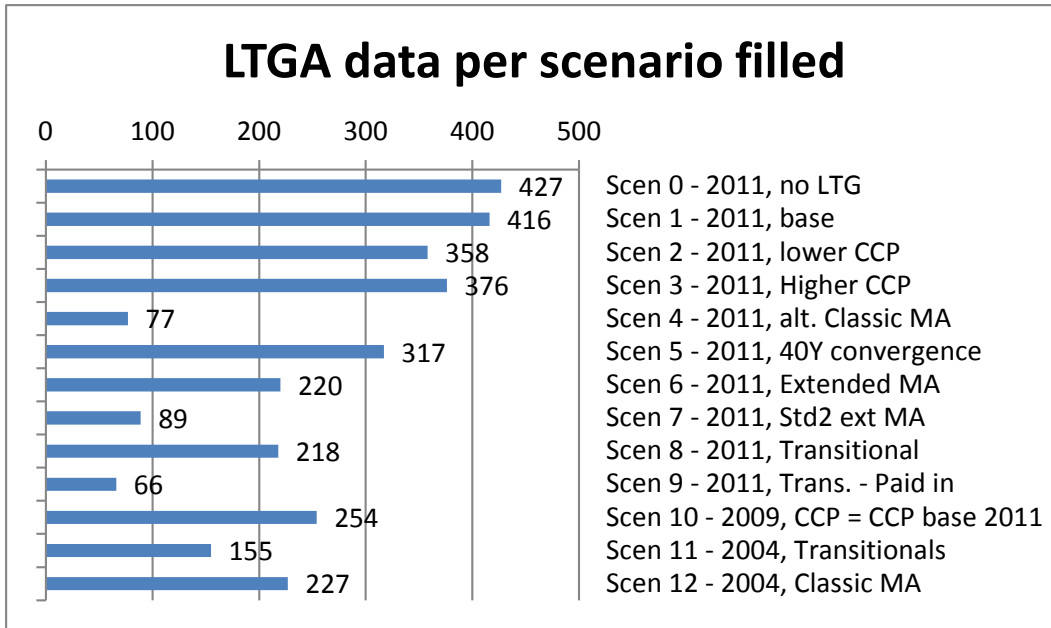
The above figure indicated that in total 427 (re)insurance undertaking participated in the quantitative part of the exercise including 211 life, 142 non-life, 65 composite and 9 reinsurance undertakings.



**FIGURE 2: PARTICIPATING UNDERTAKINGS BY SIZE**

The composition by size of undertakings<sup>5</sup> is very balanced and EIOPA is particularly satisfied with the share of medium size and small undertakings that managed to participate in the exercise. Furthermore, 55 mutual undertakings were part of the sample.

<sup>5</sup> IFRS definitions have been applied to distinguish small, medium and large undertakings.



**FIGURE 3: NUMBER OF PARTICIPATING UNDERTAKINGS BY QUANTITATIVE SCENARIO**

The above figure shows that for some of the tested scenarios, the coverage is quite low, especially for scenarios 4, 7 and 9. However, the main reason for this is the non-applicability of the tested measures in case of scenarios 4 and 7, respectively a mix of technical complexity and non-relevance of the tested measure in case of scenario 9. For the historical scenarios 10-12, the coverage is generally lower than for the YE11 scenarios because of the “best efforts” nature of the exercise and the fact that most participants prioritised YE11 scenarios over the historical ones.

## 2. Situation without the LTG Package

This section presents the expected impact on participating undertakings at YE11 in case the LTG package would not be applied.

It should be noted that the tested scenario without LTG measure (scenario 0) does explicitly not represent a policy option for the Triologue, but it was requested by Triologue parties in order to provide a neutral starting point for assessing the impact of the LTG measures, i.e. it is included for technical purposes only.

In the tested scenario 0 no CCP (vs. scenario 1 CCP= 100bps), no MA (vs. scenario 1: MA allowed), no EMA (vs. scenario 1: EMA-1 allowed) and no transitional measures apply. Furthermore, the extrapolation for the Euro and pegged currencies uses a last liquid point of 30 years (vs. scenario 1: 20 years) and a convergence period of 40 years (vs. scenario 1: 10 years) which is roughly in line with the approach tested at the last quantitative impact study conducted for European (re)insurers, i.e. QIS5. For all other currencies, the curve in scenario 1 uses a convergence period of 10y. For the GBP the LLP was 50 years both in scenario 0 as well as in scenario 1.

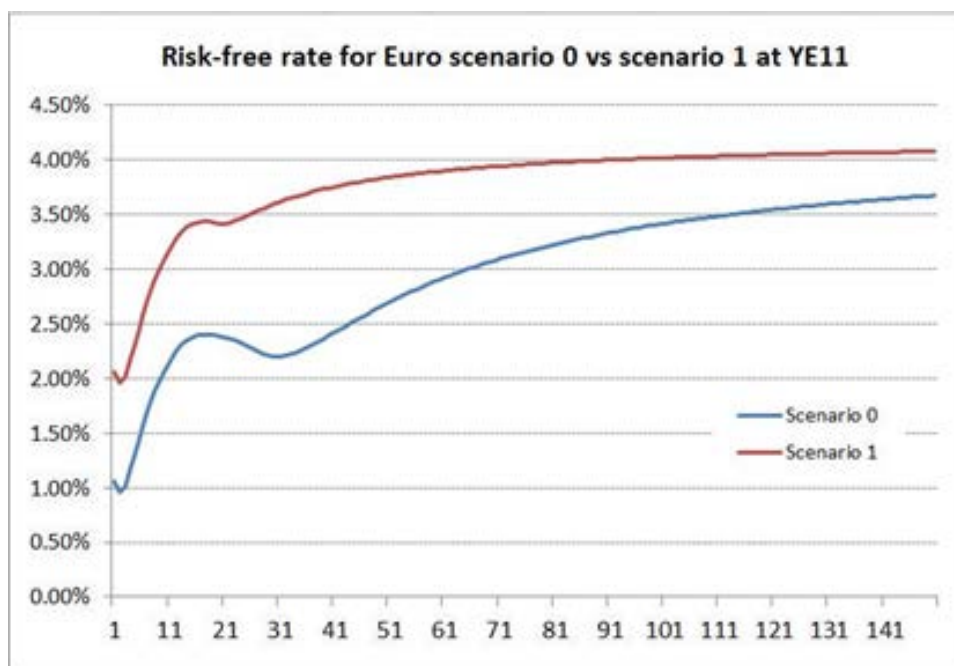


FIGURE 4: RISK-FREE RATE CURVE COMPARISON SCENARIO 0 AND 1 FOR THE EURO

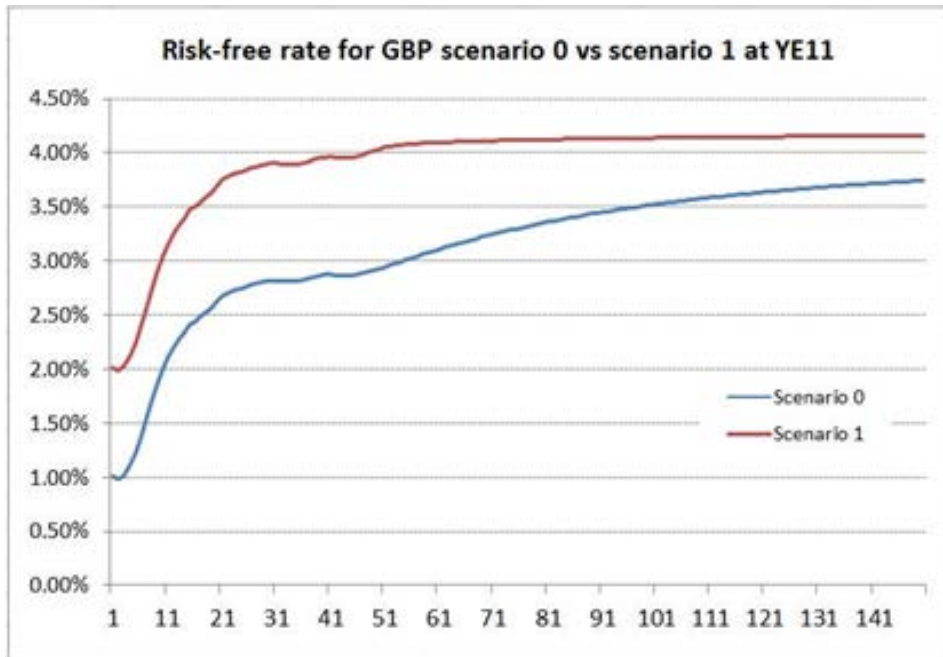
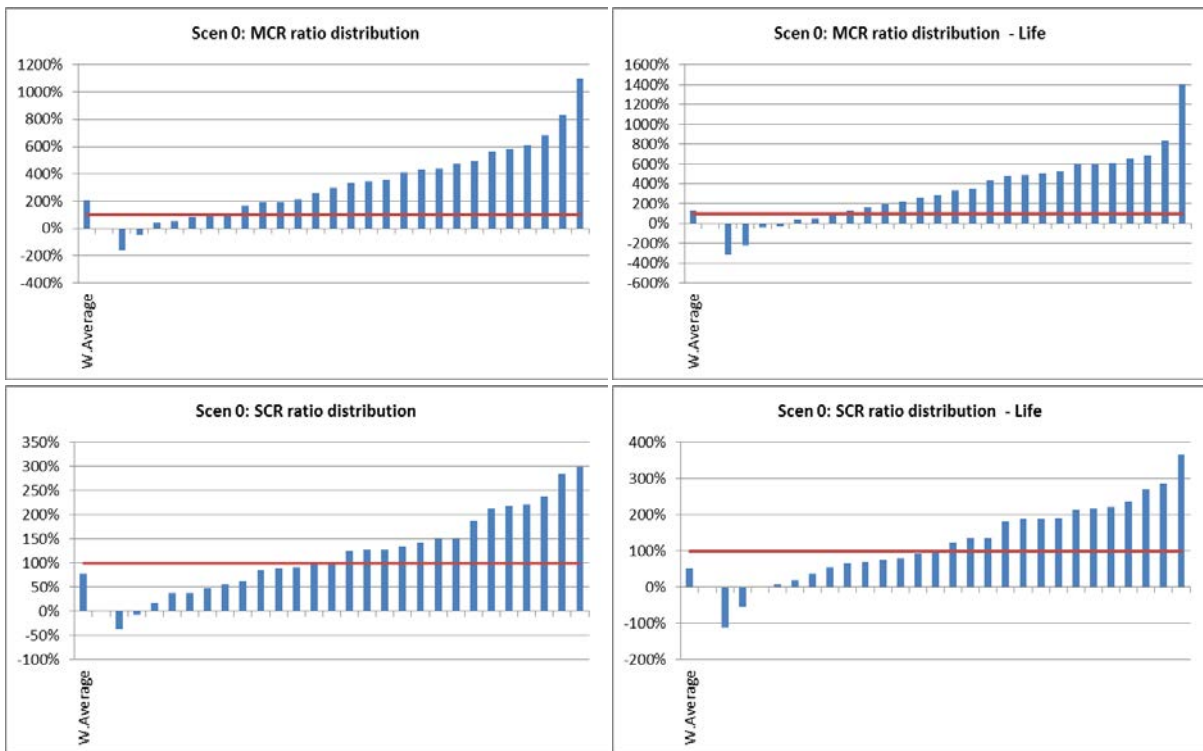


FIGURE 5: RISK-FREE RATE CURVE COMPARISON SCENARIO 0 AND 1 FOR THE GBP

For the entire LTGA sample, the described scenario 0 at YE11 results in a weighted average MCR coverage ratio of 207% (SCR: 77%) with an MCR surplus of 136 BN€ (SCR: -90 BN€). It should, however, be flagged that these results are negatively impacted by the fact that (a) the sample only covers 25% of the non-life market while it covers 59% of the life market, and (b) the sample is dominated by LTG business which was most affected by the YE11 financial distressed market conditions. In the case of the Euro, an additional factor is the change from 30 years LLP to 20 years, which is more favourable as currently the last forward rate in the LLP is below the selected UFR. These caveats are also valid for all further analysis provided in this report.

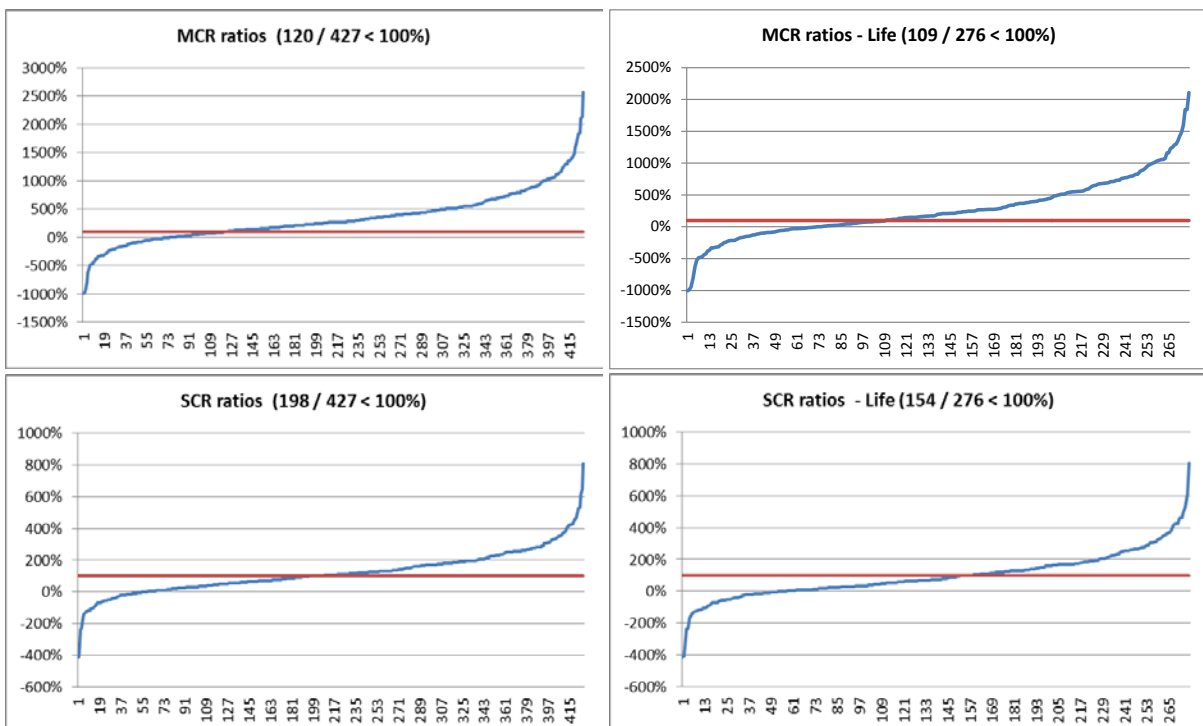
Looking at the life sample (including composites) only, the weighted average MCR coverage ratio is 132% (SCR: 53%) with an MCR surplus of 31 BN€ (SCR: -145 BN€).

The following figures provide the distribution of SCR and MCR ratios for all participating Member States separately for the entire sample and for the life sample (including composites). In roughly 30% of the Member States (each one represented as a block in the graphs below), the average life MCR ratio is below 100% in scenario 0.



**FIGURE 6: MCR AND SCR RATIO DISTRIBUTION BY MEMBER STATE IN SCENARIO 0, ANONYMISED (TOTAL SAMPLE AND LIFE INCLUDING COMPOSITE)**

When looking at the MCR and SCR ratio distribution of participating undertakings, more than 40% of the sample is below a 100% SCR ratio.



**FIGURE 7: MCR AND SCR RATIO DISTRIBUTION FOR ALL PARTICIPATING UNDERTAKINGS IN SCENARIO 0 (TOTAL SAMPLE AND LIFE INCLUDING COMPOSITE)**



Scenario 0 in combination with the “adverse” case situation of YE11 illuminates that suitable LTG measures are needed to stabilise solvency positions as part of the Solvency II framework. A number of the companies not meeting the MCR or SCR in this scenario under YE11 conditions would clearly meet these targets under YE12 conditions<sup>6</sup>, i.e. only one year later. This mainly relates to undertakings where the issues were driven by high spreads as these have come down significantly since.

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<sup>6</sup> Based on qualitative input from NSAs.



## 3. Adapted relevant risk-free interest rate term structure (CCP)

### 3.1. Purpose of the measure and highlights of the tested approach

The adaptation of the risk-free rate curve (also called counter-cyclical premium or CCP) has been designed to reduce the impact of short-term volatility on the Solvency II balance sheet during stressed situations of financial markets, most notably crises related to high spreads. At the same time, CCP aims at preventing pro-cyclical behaviour of insurance undertakings in those situations, mainly related to forced sales of distressed assets. As in the current design, the CCP is considered to be a short-term tool for temporary and exceptional financial market stresses. The triggering of the CCP is therefore expected to be of a discretionary nature.

The CCP represents a portion of the spread between the interest rates that could be earned from assets included in a representative portfolio that insurance undertakings are invested in and the risk-free rate. The CCP is the portion of the spread that is not attributable to a realistic assessment of expected losses or unexpected credit risk.

During the LTGA, two options with regards to the determination of the representative portfolio have been tested with add-on technical analysis by EIOPA: (a) the representative portfolio links to the average insurance market portfolio of the currency area (the "currency option"), or (b) it links to the national insurance market portfolio (the "national option"). Further technical details on the CCP calibration approach applied for this assessment are to be found in the appendix to this report.

In practice, the CCP is added on to the risk-free rate term structure once the measure has been triggered by supervisory authorities due to exceptional financial market conditions. Further considerations regarding the potential triggering mechanism are also to be found in the appendix to this report.


Other highlights of this measure: the application is optional for undertakings, the impact of CCP application needs to be publicly disclosed, the measure will stay enacted for at least 12 months once it is triggered, its application should not be anticipated by undertakings and it is associated with a capital charge that reflects a full loss of the CCP within the next year.

The approach chosen for the impact assessment has been to test the quantitative impact of three default levels of CCP: 100 bps, 50 bps, and 250 bps (scenarios 1-3). The impact of actual CCP values calibrated based on currency area and national specific reference portfolios, has been determined in an add-on technical analysis by EIOPA.

### 3.2. Impact on policyholder protection

#### *General assessment*

While some NSAs pointed out that a less volatile Solvency II balance sheet stemming from a CCP application would be beneficial to policyholders, others raised the concern that resulting lower levels of technical provisions will ultimately decrease the quality and



degree of policyholder protection. It was also flagged that a symmetric mechanism might do more for policyholder protection rather than relief in crisis situations only.

EIOPA generally shares the concerns raised in terms of lower levels of technical provisions, but also sees the need to clearly distinguish between a short-term crisis measure and more permanent add-ons to the risk-free curve. As the CCP is intended to be a short-term crisis measure only, it might be acceptable in order to avoid severe supervisory intervention on large parts of the insurance market in situations when this would not be appropriate.

#### ***Potential long-term application***

In case of an extended period of CCP application, the measure is generally perceived as being detrimental to policyholder protection as its effect could be to “hide” structural difficulties and potential insolvencies. Looking at the results of CCP calibrations for YE09 through to YE12 as provided in section 3.7 creates the impression that the measure might have been triggered continuously throughout that period in most Member States. However, related to this it should be said that the LTGA calibrations of the CCP should not be seen as the final ones.

On the other hand, it should be kept in mind that the triggering mechanism is not a purely mechanical one and that it involves a significant amount of judgement by supervisors which could overcome the risk of a more permanent application. Nevertheless, the need for a smooth phase in and out will in many cases result in an application of the measure for more than 12 months (as the currently envisaged minimum period).

#### ***Disclosure requirement***

As a counter balance to the concerns described above, it should be pointed out that the CCP effect on (re)insurers’ solvency positions will need to be publicly disclosed, thereby providing some degree of transparency on potential structural difficulties linked to a longer application of the measure. While policyholders will most likely struggle with properly interpreting the two different sets of solvency numbers provided by (re)insurers applying the measure, the disclosure requirement is expected to create considerable peer pressure in the market and therefore discourages any potential abuse of the measure by market participants.

### **3.3. Impact on effective and efficient supervision**

#### ***Collective supervisory tool in certain crisis situations***

The existence of a CCP mechanism can avoid severe supervisory intervention on large parts of the insurance market in situations when this would not be appropriate due to the short-term nature of the event triggering the solvency issue. The advantage of this measure over other crisis measures (e.g. the extension of the recovery period) is that it is a collective tool which makes it applicable to the entire currency area respectively national market once it is triggered.

However, this crisis measure versus other potential Pillar 2 measures, such as the extension of the recovery period, mainly focuses on spread-related crises. The measure is designed to tackle short-term volatility but does not aim at mitigating the effects of



other types of crisis that might negatively impact long-term insurance business, e.g. low interest rate environment or real estate bubbles.

### ***Comparability***

Another positive aspect of the collective nature of the CCP is that the measure is consistently applied across (re)insurers within a national respectively currency area market. Therefore, results of undertakings applying the measure are fully comparable and not impacted by undertaking-related supervisory discretion or specificities. In addition, the full disclosure of the CCP impact facilitates the comparison of solvency across the entire market including the undertakings not applying CCP.

In some cases, the effectiveness of supervision could, however, be impacted as the non-undertaking related calibration of the measure might not necessarily reflect company specificities. This could happen in both ways, i.e. companies less affected by the crisis than the market average benefit while companies more affected than market average might still not meet capital requirements and therefore supervisory action needs to be triggered.

### ***Effectiveness of currency versus national CCP option***

The effectiveness of the measure might be significantly lower in case only the currency option, i.e. where the representative portfolio used for determining the CCP is linked to the average insurance market portfolio of the currency area, is implemented rather than the national option or a combination of both.

In the Euro area, this mainly relates to the fact that government bond portfolios of (re)insurance undertakings usually have a strong “home bias” and that the level of government bonds spreads might vary quite significantly across national markets as was the case at the YE11 reference date. The flip side of implementing a national option in the Eurozone is the fragmentation of markets and the resulting complexity of the CCP treatment for cross-border business which would not exist with a currency option where the level of CCP would be linked to the currency of obligations.

For all Member States, but mainly smaller ones, the fact that larger parts of the investments portfolios of (re)insurers might be in other than the national currency would result in a reduced level of the currency CCP option. This is due to the technical restriction of the currency CCP option. For a national CCP, investments (and related spreads) denominated in any currency could be included in the calibration of the measure which overcomes this issue. Another solution to explore might be an adaptation with the conceptual and scope of the national adaptation, but whose weights and spreads would be based on those assets expressed in the local currency of the undertakings covering contracts in the same currency (i.e. with no currency mismatch). This solution is not free of drawbacks but covers the target of the national adaptation and at the same time prevents encouraging currency mismatching between assets and liabilities.

To summarise, while the tested currency option of the CCP seems more aligned with the European spirit of the Solvency II framework, it seems to result in a limited effectiveness for some Member States, most notably those with high government spreads and/ or high proportion of investments in foreign currencies.



### *Current design of the measure*

Some NSAs mentioned that the current calibration of the CCP risk sub-module (100% shock under the SCR calculation) and its correlation with other risks may largely offset the benefit to the solvency position provided by the use of the CCP for the valuation of the liabilities. Thus, it reduces the efficiency of the measure. This mainly refers to life companies with a low level of diversification within the market risk.

On the other hand, since a CCP reduction means a material risk, it cannot be ignored in the calculation of the SCR in accordance with the Solvency II Directive. Furthermore, the impact on the final SCR of the SCR CCP risk sub-module is reduced due to loss absorbency capacity of technical provisions (around 30% of reduction in QIS5) and the effect of diversification.

### *Functioning of the triggering as a key driver to effective supervision*

Though the CCP can be a very effective supervisory tool, the actual effectiveness strongly depends on a smooth triggering process by supervisors in times of financial market distress. While supervisors can control the general procedural element to this, i.e. quick reaction time and continuous monitoring of the situation, there is also a strong political and financial stability element to the triggering. This is especially the case when the crisis relates to high government bond spreads in certain markets as was the case for the YE11 reference date. Given the risks of self-fulfilling mechanisms and the risks of aggravating crisis situations, EIOPA considers it necessary to assess whether in such a situation it is possible to guarantee a timely activation of the adaptation, and thus whether it is realistic to expect that such tool can be an efficient supervisory tool.

In scope of the LTGA exercise, EIOPA also investigated the design of a set of financial market indicators which could be used to support a decision for activating and deactivating an adaptation to the risk-free rate as set out in the framework for the LTGA. EIOPA's analysis suggests that such set of financial market indicators is best based on different types of time series: primary indices, supportive indices, complementary indices and real economy indices. Further details can be found in the appendix to this report.

### *Potential complexities resulting from a CCP application*

In some cases the effectiveness in supervision of undertakings in breach of the SCR or MCR could be reduced as it may be more difficult to transfer a portfolio of insurance obligations for which the level of technical provisions has been reduced as a result of the CCP application. For supervision at group level, it is likely that, as for other LTG measures, the complexity of a group valuation framework where different levels of CCP apply to obligations denominated in different currencies or situated in different national markets can have an impact on the effectiveness and efficiency of group wide supervision as complexity is increased.

The determination and monitoring of the set of financial market indicators which could be used to support a decision for activating and deactivating an adaptation to the risk-free rate for all relevant currencies on a permanent basis is not necessarily a simple process. The level of complexity and implementation efforts required by EIOPA as well as undertakings is illustrated by outlining the main features of such a set of indicators that EIOPA's analysis suggests as desirable: regarding the primary indices, the development of these time series would be directly linked to the market value of assets held by



(re)insurance undertakings, while some other time series could be used as supportive information to cross-check such an analysis. Additionally, composite indicators of systemic risk can furthermore be used to complement the presentation of the results. Finally, it is recommended to compare the findings resulting from the analysis of financial market developments against time series from the real economy which could signal a crisis situation.

When applying such a set of financial market indicators, it is of course recommended to re-assess, over time, the explanatory power of the set of indices used for the analysis. Firstly, insurance undertakings' portfolios might change as, for instance, additional asset classes become more important. Secondly, future financial crises might reveal new patterns of shock transmission, so that the addition of new primary and supportive indices would be needed to complete the analysis.

### 3.4. Implementation effort

#### *For industry*

##### *Relating to the LTGA*

In terms of resources dedicated to aspects of the technical specifications for the LTGA, undertakings reported that the CCP was relatively straightforward to implement given the simplified approaches tested in the LTGA.


##### *Relating to the real implementation of the CCP*

Overall, from an industry perspective, the CCP is regarded as the least resource consuming element compared to other LTG measures tested. As any other measure functioning as an adjustment to the basic risk-free curve, efforts are required for recalibrating Economic Scenario Generators (ESGs). These ESG adjustments would become more complex in cases where different CCP adaptations would apply, i.e. at Group level or potentially for cross-border business, or in cases where CCP and other LTG measures that result in adjustments of the basic risk-free rate, would apply at the same time. Industry participants indicated that it would be crucial that any application of a CCP is communicated in a timely manner to ensure a smooth implementation. For the same reasons, a number of industry participants would be in favour of a predictable CCP mechanism.

Once activated, the CCP itself would not take up much additional ongoing resources and costs to maintain in the current valuation models. However, depending on the organisational structure of undertakings, additional efforts might be required at group level and at local level to align maintenance efforts.

#### *For NSAs*

It is generally expected that the supervisory review process would require additional resources to review the correct application of a CCP and to ensure that undertakings do not anticipate the application of a CCP (though this was seen as very difficult to implement by NSAs). In addition, further costs and resource requirements would arise from the continuous monitoring of representative portfolios as well as financial market conditions in order to determine the appropriateness of activating a "national" CCP.



Moreover, it is also expected that additional process activities and coordination procedures will need to be established between EIOPA and NSAs to ensure consistent and smooth calibration and triggering processes for national and currency area CCPs.

In comparison to other LTG measures, the application of a CCP would, however, not be the most resource intensive area of supervisory review.

### ***For EIOPA***

#### *Relating to the LTGA*

EIOPA did face a number of technical challenges in calibrating the CCP levels for the assessment. The main issues related to the need for clarifying the framework and making it operational as well as to the insufficient quality and granularity of information collected respectively provided during the LTGA exercise. However, EIOPA would expect that these problems could largely be overcome in the future.

Further details on the described challenges related to the CCP calibrations are provided in the appendix to this report.

#### *Relating to the real implementation of the CCP*

It is anticipated that EIOPA shall play a relatively strong role with regards to the potential application of the CCP measure which also implies significant implementation efforts for EIOPA. This mainly links to

- a one-off effort in defining consistent CCP formula calibrations and triggering approaches (and potential later reviews of this) – EIOPA has already started this work in the context of the LTGA, more detailed insights can be found in the appendix to this report;
- the continuous tracking of the representative portfolios for the activation mechanism as well as feeding and monitoring the indicators based on market data and the synthetic indices for all currencies and on a permanent basis in a way that allows for an effective decision of activation to be made in timely manner in a crisis situation;
- the coordination of triggering and phase-out activities across all Member States (including the triggering agreement on the national option).

From EIOPA's perspective, the CCP is the most resource consuming of the tested LTG measures. However, EIOPA would not see this being a major hurdle for the implementation of the measure.

## **3.5. Incentives for good risk management**

Some participating undertakings either stated that the CCP would have no impact on their risk management behaviour or that without a CCP (or alternative measures) their risk management might be negatively affected by discouraging long-term bond holdings. Other undertakings emphasised that a CCP (but possibly also other LTG measures), may impact negatively on their risk management and hedging strategy. In essence this would be due to a possible divergence between on the one hand the assumptions used in the Pillar 1 regulatory approach and on the other hand the undertakings' own views as to market consistent assumptions. For instance, a balance sheet which is hedged on an 'economic' basis will not be hedged on a basis where the CCP applies.



The majority of participating supervisors felt that the application of CCP has no direct risk management implications as it is independent of individual investment choices by undertakings. However, some NSAs are concerned that the current CCP concept might incentivise increased holdings of bond-like assets over other investments such as property and equities resulting in less diversification within investment portfolios.

It should also be flagged that the implementation of national CCPs might further incentivise increases in holdings of national government bonds by (re)insurers in Member States with high government bond spreads.

Potential attempts to align investment strategies with the CCP representative portfolio was an aspect also mentioned by several LTGA participants that proposed an undertakings specific measure instead.

### 3.6. Impact on financial stability and prevention of systemic risks

#### *Stabilizing effect*

The adaptation to the relevant risk-free term structure is intended to respond to the increased volatility in market prices in times of stressed market conditions. By increasing the stability in own funds, insurance undertakings under strain may be less inclined to sell assets they would otherwise have not kept on their books, thus also preventing contagion effects. Therefore, financial stability is one of the key aims of the measure.

A number of industry participants responded that out of the LTGA measures, the CCP best serves the purpose of reducing “artificial volatility” in the own funds. It was, however, also highlighted that the design of the measure will be crucial. They also stated that one advantage of the measure was that it applies to all business as opposed to e.g. the MA which is linked to strict liability criteria. However, undertakings argued that the measure needs to be predictable as they will not be able to benefit from the measure if the actions they take have to be based on the assumption that the regulator may not trigger the measure.


On the other hand, some industry participants as well as some NSAs raised the concern that the CCP may create “artificial stability”, thus creating a false sense of security for management of undertakings (and regulators) eventually leading to the situation where no mitigating actions are taken, thus risking a destabilisation of the insurance sector. To reduce this potential effect, a transparent disclosure to the financial market may help (i.e. establishing a mechanism that requires insurers to reflect the effect of the measure over time).

#### *Not an all-round crisis tool*

It was also highlighted by participants that the CCP does not solve the challenges of e.g. a low interest rate environment. While this sort of crisis might not have similar contagion effects to financial markets compared to a potential collective sale of distressed bonds, supervisors will still need suitable tools to address this sort of exceptional situation because it harms the financial stability within the insurance sector.

#### *Triggering challenges*

In the view of NSAs, EIOPA and the ESRB, the announcement of a CCP, and thus the implicit recognition that markets are in a temporary and exceptional stressed situation is



a particularly delicate issue, especially when the distress is linked to government bonds. The triggering may result in a self-fulfilling prophecy, thus causing problems that the measure intended to prevent in the first place. The situation becomes particularly complicated in the Eurozone, where countries share the same currency but the development of the national markets can significantly differ.

Supervisory participants also raised the risk that what is perceived as short-term fluctuations on the financial markets (and thus implying the application of the CCP) may turn out to be forebodings of structural change in investment returns or credit risk. This also means that a fully mechanic triggering mechanism might not be suitable for a crisis tool as these sort of trends can only be identified by including an appropriate portion of expert judgment in the triggering process.

### **Asymmetry**

Some participants pointed out that as a financial stability tool the CCP's asymmetric nature limits its utility to periods when markets are undervalued without addressing periods where markets are overvalued. Current proposals may prohibit insurers from 'pricing in' the CCP, but cannot prevent it from influencing their risk appetite more generally. Without some symmetric mechanism working on the upside to address this, this could result in insurers adding to system-wide exuberance in upturns and risk under-capitalisation in subsequent downturns with adverse consequences for the system as a whole.

## **3.7. Impact on (re)insurance undertakings' solvency position<sup>7</sup>**

### **3.7.1. All undertakings**

#### ***Results of the CCP calibration work by EIOPA***

For the LTGA, EIOPA has derived in accordance with the Terms of Reference the adaptation to the risk-free term structure per currency and per national market for the tested reference dates. In the appendix to this report, all the details about the CCP values for different reference dates, the methodology and the assumptions used are detailed.

The calculation of the adaptations has been carried out by EIOPA during the technical assessment, in line with the provided LTGA framework and based on portfolio data provided by LTGA participants and supplemented by information provided by NSAs as described in the appendix to this report.

It will be necessary to update the performed LTGA CCP calculations once the insurance business where the matching adjustment applies is defined in a precise manner as this will impact the composition of the representative portfolios (both measures cannot apply to the same obligations).

The adaptations per currency and per national market are shown in the following tables alongside the applied weights for government and corporate bonds. Please see the

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<sup>7</sup> It should be noted that all analysis shown in this section is based on the "Base scenarios" of the LTGA, i.e. undertakings have applied the following LTG measures alongside the CCP: the "classical" MA Standard version, the Extended MA Standard I version, and a 10 years convergence speed with regards to extrapolation.

appendix for a proper interpretation of the following tables. Weights and spreads are based on the investment portfolios of insurers in the respective Member States which might partially lead to values that do not seem directly intuitive.

|      | Weights Govts | Weights Corps | 31_12_04 | 31_12_09 | 31_12_11 | 31_12_12 |
|------|---------------|---------------|----------|----------|----------|----------|
| EURO | 32.3%         | 52.4%         | 5        | 30       | 126      | 63       |
| BG   | 52.2%         | 10.1%         | -        | 18       | 22       | 12       |
| DK   | 19.8%         | 56.0%         | 6        | 28       | 47       | 19       |
| HU   | 86.3%         | 10.1%         | 16       | 20       | 177      | 82       |
| LI   | 50.0%         | 35.0%         | -        | 2        | 25       | 18       |
| LT   | 87.5%         | 0.3%          | -        | 9        | 221      | 252      |
| NO   | 9.8%          | 62.6%         | 20       | 71       | 111      | 89       |
| PL   | 94.6%         | 3.4%          | 14       | 15       | 17       | 11       |
| RO   | 50.0%         | 35.0%         | -        | 124      | 175      | 122      |
| SE   | 17.9%         | 48.0%         | 8        | 18       | 56       | 45       |
| UK   | 30.5%         | 51.0%         | 20       | 63       | 87       | 63       |

TABLE 3: CURRENCY AREA CCPs (BPS)

|    | Weights Govts | Weights Corps | 31_12_04 | 31_12_09 | 31_12_11 | 31_12_12 |
|----|---------------|---------------|----------|----------|----------|----------|
| AT | 16.8%         | 52.3%         | 4        | 30       | 98       | 48       |
| BE | 55.7%         | 35.7%         | 5        | 33       | 161      | 74       |
| BG | 52.2%         | 10.1%         | -        | 21       | 114      | 31       |
| CY | 50.0%         | 35.0%         | 2        | 97       | 770      | 326      |
| DK | 19.8%         | 56.0%         | 7        | 30       | 62       | 29       |
| EE | 44.8%         | 48.0%         | 6        | 39       | 242      | 124      |
| FI | 11.7%         | 55.4%         | 2        | 25       | 103      | 43       |
| FR | 33.7%         | 46.6%         | 5        | 30       | 133      | 69       |
| DE | 12.1%         | 76.1%         | 5        | 51       | 140      | 76       |
| GR | 62.8%         | 21.0%         | -        | 61       | 1,187    | 223      |
| HU | 86.3%         | 10.1%         | 15       | 20       | 176      | 82       |
| IE | 77.8%         | 15.4%         | -        | 8        | 46       | 36       |
| IT | 65.8%         | 26.2%         | 7        | 30       | 354      | 199      |
| LI | 50.0%         | 35.0%         | -        | 13       | 56       | 45       |
| LT | 87.5%         | 0.3%          | 1        | -        | 46       | 44       |
| LU | 60.0%         | 23.0%         | 1        | 5        | 71       | 32       |
| MT | 67.1%         | 20.9%         | 1        | 49       | 365      | 123      |
| NL | 61.3%         | 32.3%         | 8        | 33       | 76       | 53       |
| NO | 9.8%          | 62.6%         | 20       | 71       | 113      | 89       |
| PL | 94.6%         | 3.4%          | 14       | 15       | 16       | 11       |
| PT | 36.5%         | 52.5%         | 2        | 26       | 433      | 127      |
| RO | 50.0%         | 35.0%         | -        | 124      | 175      | 123      |
| SK | 51.1%         | 43.4%         | 1        | 35       | 149      | 34       |
| SI | 44.0%         | 48.1%         | 3        | 30       | 163      | 49       |
| ES | 38.6%         | 49.9%         | 6        | 50       | 207      | 187      |
| SE | 17.9%         | 48.0%         | 8        | 18       | 60       | 47       |
| UK | 30.5%         | 51.0%         | 21       | 62       | 88       | 63       |

TABLE 4: NATIONAL CCPs (BPS)



Based on the above presented CCP levels and the quantitative submissions by undertakings (especially with regards to scenarios 1-3), EIOPA has performed additional analysis to estimate the impact of the “real” CCP levels at the respective reference dates as presented later in this section.

In addition, NSAs have been asked whether according to their judgment a CCP would have applied at end 2011 and 2012. Responses considerably vary across jurisdictions. It is both a reflection of the economic situation the countries are in, the specific investment style of the local insurance undertakings and different perspectives of the events that would justify the triggering of such a measure.

### CCP impact on Best Estimate

The graphs below show the variation of the Best Estimate (BE) relative to the duration of liabilities.<sup>8</sup> The analysis provides the overall impact in terms of Best Estimate stemming from the CCP linked to the duration of liabilities.

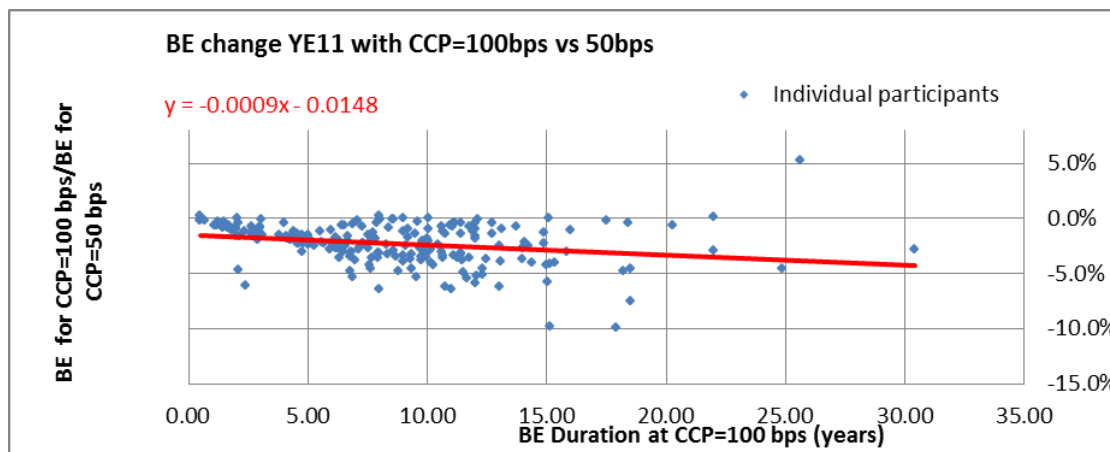


FIGURE 8: BE CHANGE YE11 FOR CCP OF 100 BPS VS 50 BPS

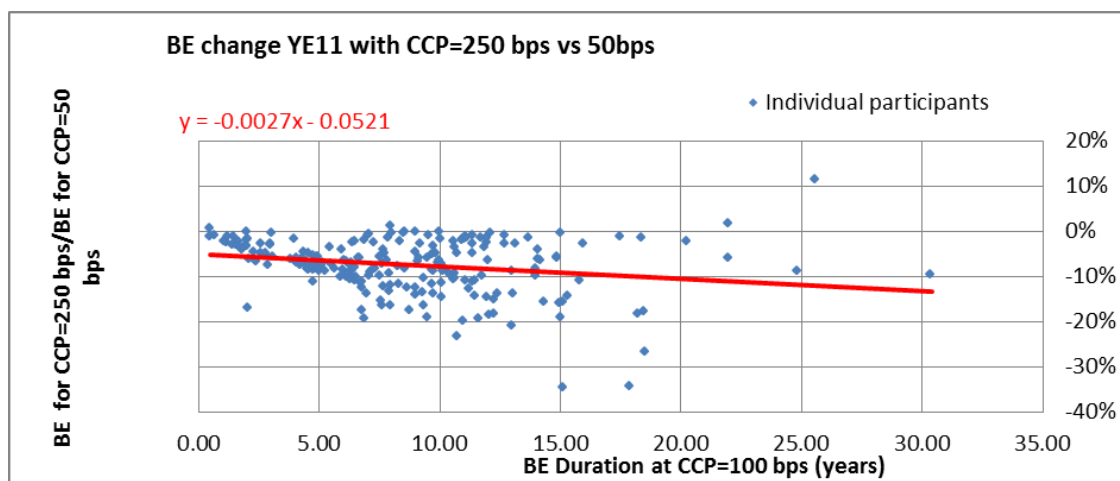


FIGURE 9: BE CHANGE YE11 FOR CCP OF 250 BPS VS 50 BPS

As expected, the application of a higher CCP is generally reflected in a lower amount of BE. The graphs also show that the impact on BE is positively correlated with the duration

<sup>8</sup> The Best Estimate used for this purpose is the total BE of the CCP scenario concerned. The duration considered in this analysis is the one stemming from scenario 1 calculations (CCP=100 bps).

of BE (i.e. on average a higher BE decrease can be observed for liabilities with longer durations).

Determining the BE impact of not applying a CCP versus applying a CCP was not possible based on the LTGA submissions.

### CCP impact on solvency ratios

Figure 10 and Figure 11 display the change in SCR ratios by Member State comparing the three tested default CCP levels. It confirms that in most Member States the application of a CCP positively impacts SCR ratio levels. However, in several jurisdictions the ratio impact of higher CCP levels is negative. This relates to the fact that higher CCP does on one hand result in lower BE thus higher Own Funds (OF), but on the other hand the SCR capital charge for CCP risk might increase over-proportionally at the same time. Further insights on this issue will be provided later in this section.

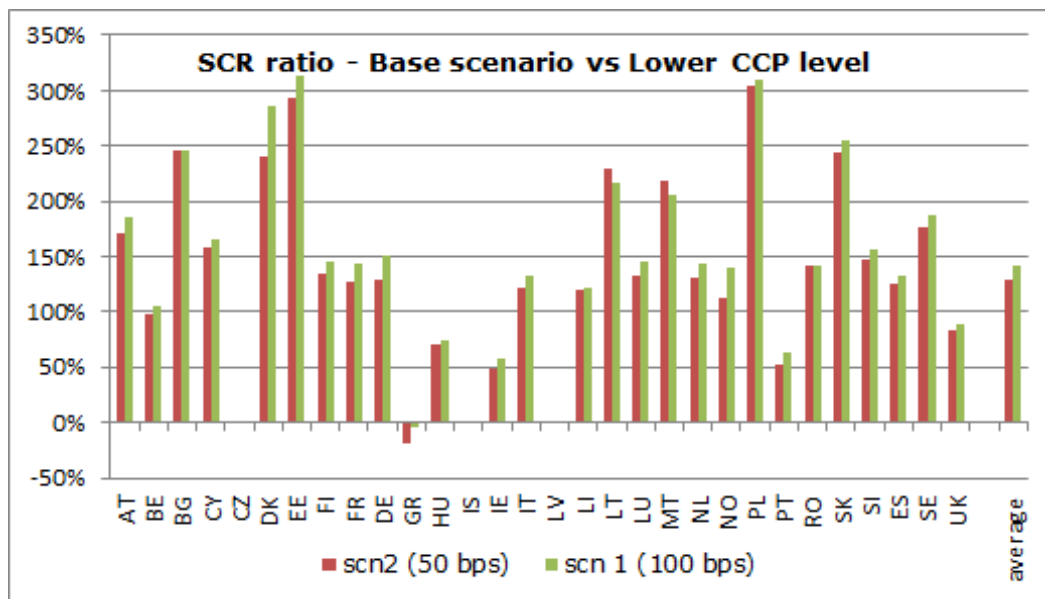


FIGURE 10: SCR RATIO DISTRIBUTION FOR 50 VS 100 BPS CCP AT YE11

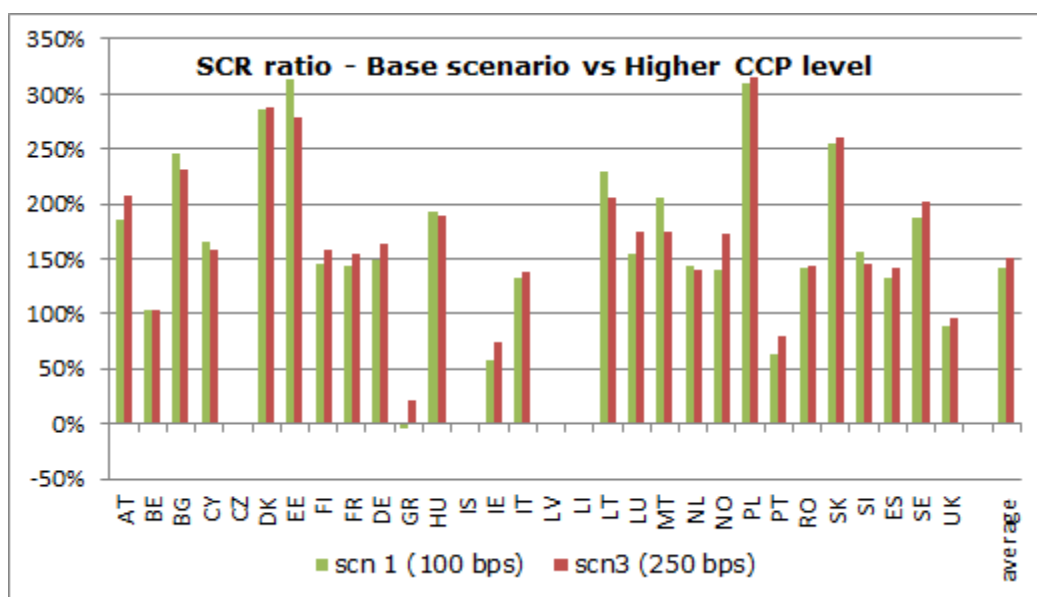


FIGURE 11: SCR RATIO DISTRIBUTION FOR 100 VS 250 BPS CCP AT YE11



Figure 12 provides estimates of the impact of “real” CCP levels of different Member States for YE11 for the national as well as the currency option of the measure. The impact of these “real” adaptations on the solvency position of the undertakings for YE 11 has been performed making simple linear assumptions for surplus and SCR by comparing the CCP level with the results of the closest CCP scenarios (in terms of CCP level) tested in the exercise.

The results should not be treated as the “true” impact of CCP but they give a solid directional indication of a scenario where the national CCP (or the currency CCP) would have been applied simultaneously by all undertakings.

The national and the currency CCP have been assumed to be applicable to all relevant insurance obligations (including cross-border business) and all insurance undertakings (including those that might not have opted for applying the measure).

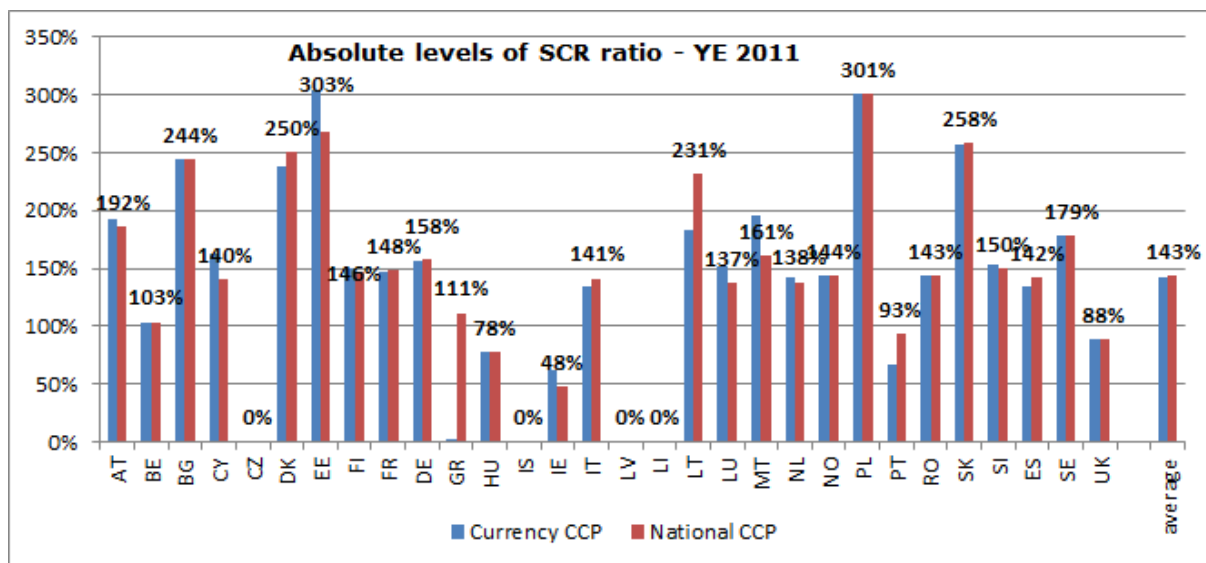
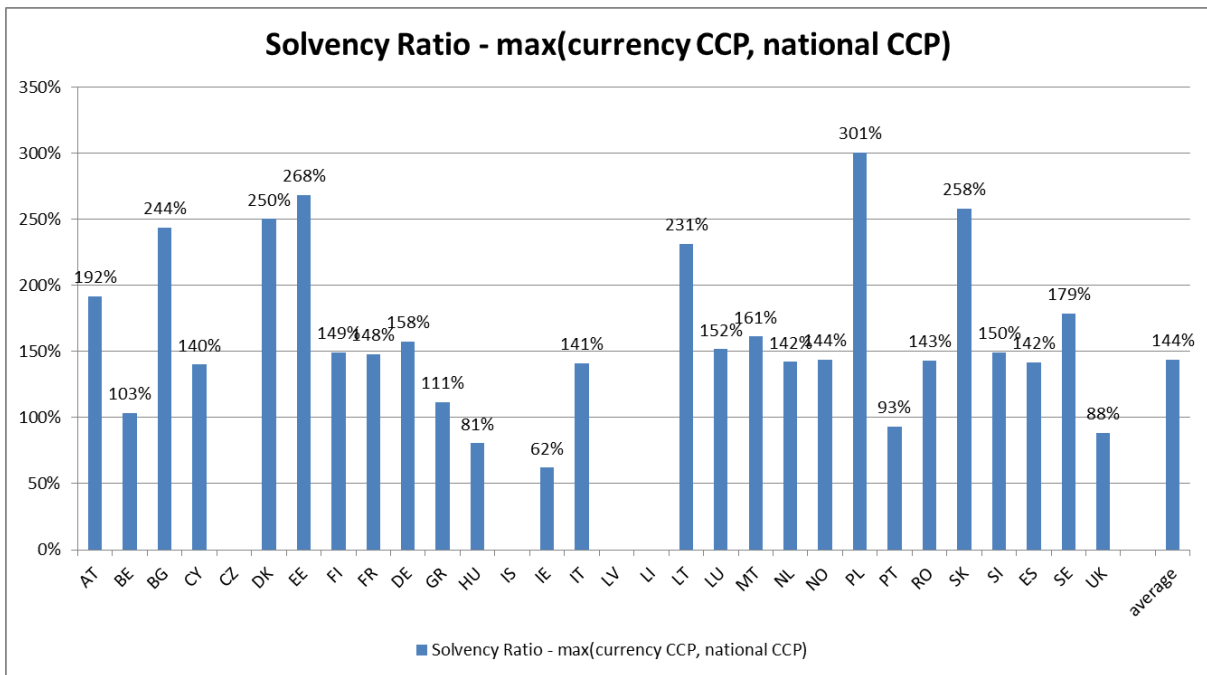


FIGURE 12: SCR RATIOS AT YE11 WITH APPLICATION OF NATIONAL AND CURRENCY CCP LEVELS

In the absence of reliable data for the solvency position without a CCP by Member State, no real conclusion can be drawn on whether the tested CCP mechanism on a “standalone basis” is effective for the Member States in terms of SCR ratio impact. The analysis showing both adaptation effects leads to a clear conclusion for one Member State, GR, where the national CCP has been considerably more effective than the currency CCP bringing the average SCR ratio above the 100% line, while the currency CCP fails in such a goal. In all other MSs, both adaptations performed rather similarly (i.e. either none of the options or both have achieved the goal of bringing the average SCR ratio above the 100% line).

As a general indication, the following graph shows the situation where the maximum of the two devices would have been applied in each Member State.



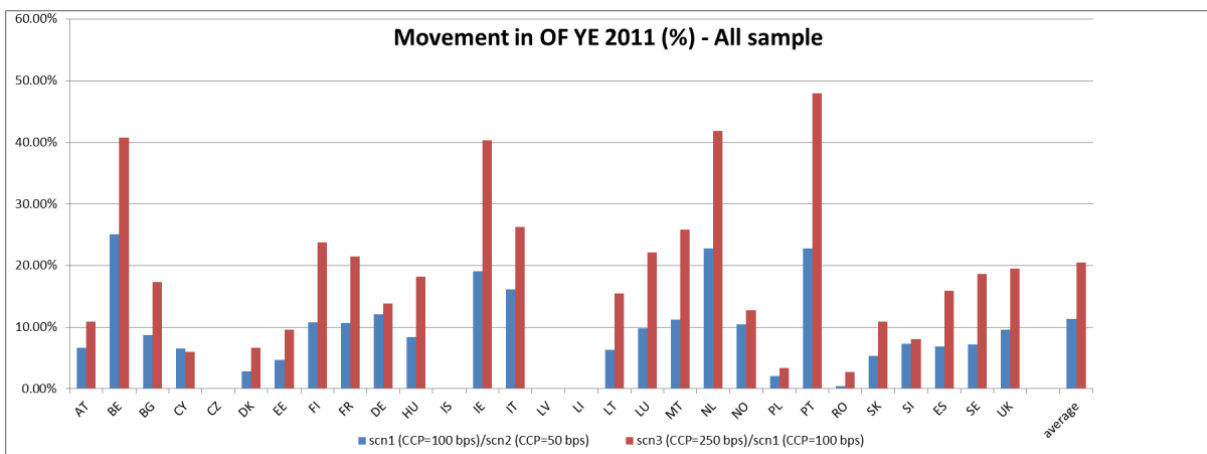
**FIGURE 13: MAXIMUM SCR RATIO OF YE11 NATIONAL AND CURRENCY CCP**

It should be kept in mind that a comparability of the presented solvency ratios across Member States is not useful mainly as some of them have widely applied the Matching Adjustment in the tested CCP scenarios and others have not. Furthermore, the general caveats of results linking to this exercise apply as laid out in Section 1.1 including varying market coverage.

Determining the SCR impact of not applying a CCP versus applying a CCP was not possible based on the LTGA submissions and the complex effects of the measure on a number of balance sheet and SCR items.

### CCP impact decomposed

The graphs below decompose the effect on the solvency ratio into the surplus/ own funds effect and the SCR effect.



**FIGURE 14: MOVEMENT OF OF FOR SCEN 1 VS SCEN 2 AND SCEN 3 VS SCEN 1**

As already indicated above, a higher CCP does in all cases result in a lower BE and consequently in a higher level of OF.

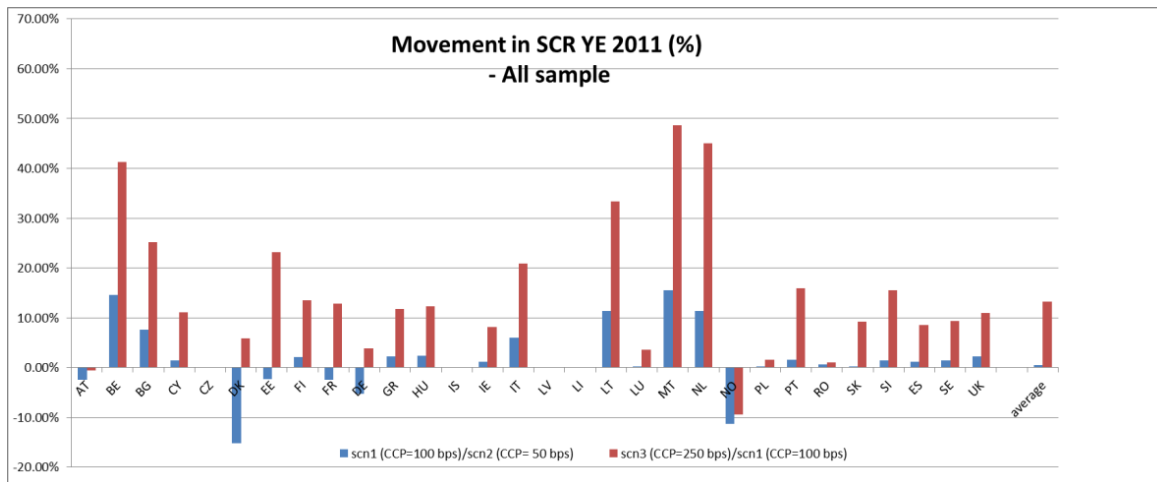


FIGURE 15: MOVEMENT OF SCR FOR SCEN 1 VS SCEN 2 AND SCEN 3 VS SCEN 1

However, on the SCR side, the CCP risk in many cases becomes the dominant market risk which results in a limited ability of undertakings to reduce the CCP capital charge by the means of diversification. On the other hand, the application of the CCP can result in a relatively large impact on deferred tax positions and future discretionary benefits which are both used as risk mitigating instruments for capital requirements i.e. tend to offset parts of the CCP risk impact. It should be noted that an increase in the CCP level also entails several other side effects on the SCR calculation of other risk modules (e.g. lapse risk, interest rate risk, spread risk). All these effects render an assessment on the SCR impact of the CCP as such quite challenging.

In order to assess to what extent the capital requirement for CCP risk offsets the capital relief which the measure provides; different calibrations of the CCP risk sub-module are tested below.

### CCP risk sub-module

The table below shows the impact of different CCP sub-module plus correlation assumptions on the solvency position (SCR, Eligible OF, SCR Ratio, Surplus) of the average LTGA sample. The first four rows relate to a CCP application of 50 bps, the next four to 100 bps and the last four to 250 bps.

| [EU Sample]      | All     | Sub-sample | LTG     | NoCCP risk | 65% and 50% correl | 50%correl | 65% of risk |
|------------------|---------|------------|---------|------------|--------------------|-----------|-------------|
| scr (50 bp)      | 324,783 | 82.4%      | 267,692 | 254,583    | 252,521            | 256,205   | 260,384     |
| eof (50 bp)      | 416,813 | 83.6%      | 348,402 | 347,799    | 347,815            | 348,044   | 348,133     |
| Ratio (50 bp)    | 128%    |            | 130%    | 137%       | 138%               | 136%      | 134%        |
| Surplus (50 bp)  | 92,030  |            | 80,710  | 93,216     | 95,294             | 91,838    | 87,748      |
| scr (100 bp)     | 326,512 | 82.4%      | 268,927 | 231,236    | 237,080            | 252,809   | 248,938     |
| eof (100 bp)     | 463,887 | 83.7%      | 388,464 | 387,498    | 387,882            | 388,183   | 388,082     |
| Ratio (100 bp)   | 142%    |            | 144%    | 168%       | 164%               | 154%      | 156%        |
| Surplus (100 bp) | 137,375 |            | 119,537 | 156,263    | 150,802            | 135,374   | 139,144     |
| scr (250 bp)     | 369,781 | 82.0%      | 303,261 | 196,399    | 236,403            | 284,967   | 251,677     |
| eof (250 bp)     | 558,993 | 83.6%      | 467,106 | 465,127    | 466,615            | 466,940   | 466,781     |
| Ratio (250 bp)   | 151%    |            | 154%    | 237%       | 197%               | 164%      | 185%        |
| Surplus (250 bp) | 189,212 |            | 163,845 | 268,728    | 230,212            | 181,973   | 215,103     |

TABLE 5: SENSITIVITY ANALYSIS OF YE11 CCP IMPACT WITH DIFFERENT CALIBRATIONS OF THE CCP SUB-MODULE (NO CCP RISK AND 65% CCP RISK) AND CHANGED CORRELATION ASSUMPTIONS (50% WITH SPREAD RISK)

For the entire sample, the benefit of completely removing the CCP sub-module in terms of solvency ratio for a CCP of 100 bps would be around 22 percentage points. (168%-144%)

### *Impact in case of a restriction to liabilities with a duration > 7 years*

It should be noted that the LTGA submissions did not enable EIOPA to provide quantitative insights into the impact that the CCP application would have in case it were restricted to liabilities with a duration of more than 7 years only.

However, based on qualitative NSA input it seems that in a number of Member States the impact of such a tool would be very limited as a large part of liabilities even in life business have shorter durations. Highest average durations of liabilities have been generally observed in central and northern Europe where the spread issue at YE11 was also less relevant than in other Member States.

Furthermore, several NSAs pointed out that in case the measure was applied only to liabilities with duration higher than 7 years, this would pose the problem of splitting the liabilities by duration and the use of different risk-free rates for “with profit contracts” backed by the same (legally) identified asset portfolio.

### 3.7.2. Undertakings by size

No special observations have been made in relation to different impacts of the CCP linked to the size of the undertakings.

### 3.7.3. Undertakings by type

#### *Life undertakings*

Given the sample composition with a strong focus on life business and the described effect of the CCP impact being larger for long-term business, the below charts on life business impacts largely mirror the effects that have already been seen for the overall sample in the section above.

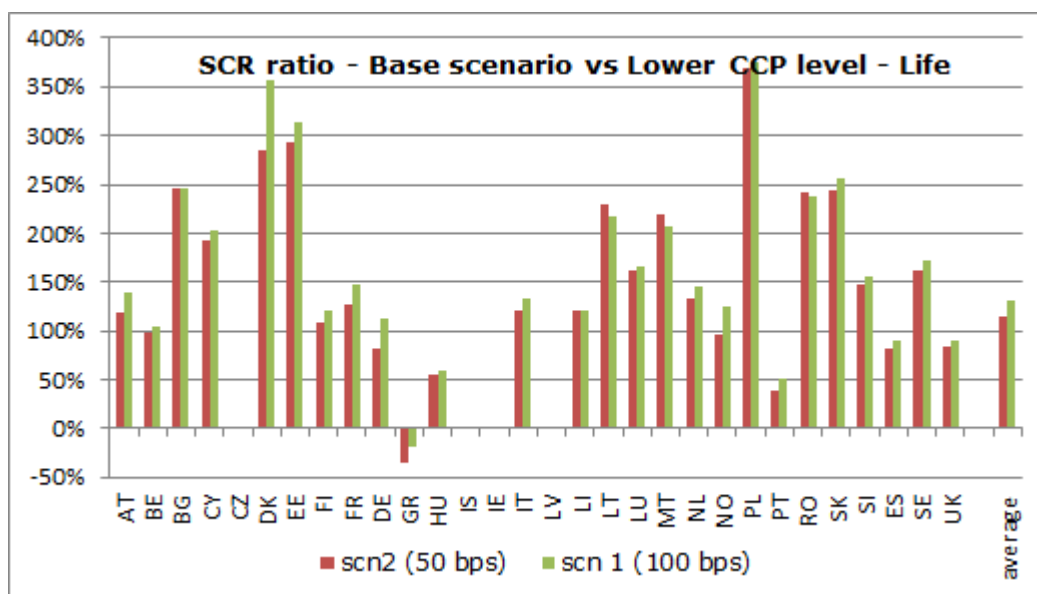


FIGURE 16: SCR RATIO DISTRIBUTION FOR 50 VS 100 BPS CCP AT YE11 – LIFE

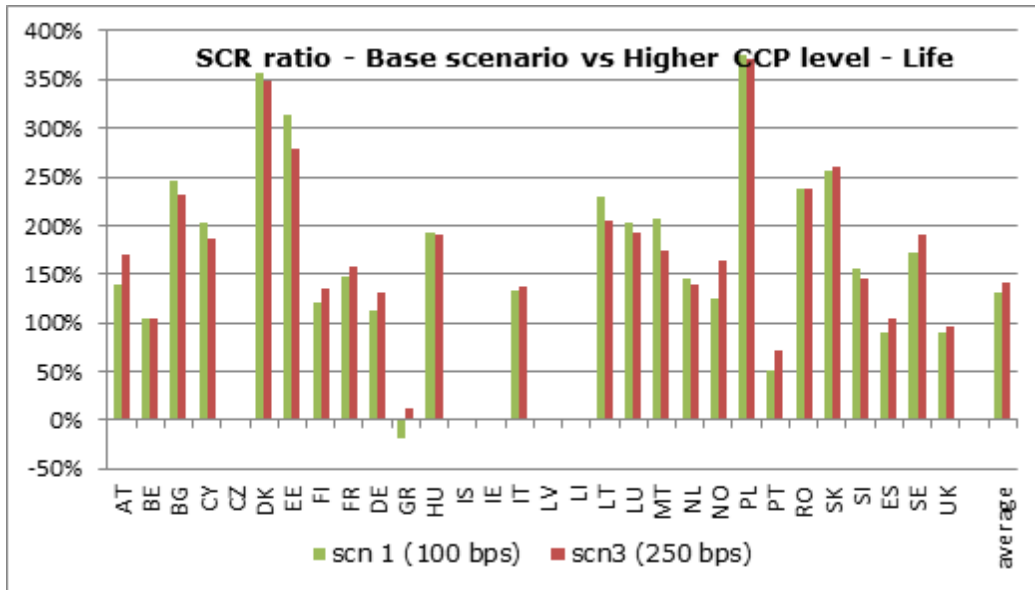


FIGURE 17: SCR RATIO DISTRIBUTION FOR 100 VS 250 BPS CCP AT YE11 – LIFE

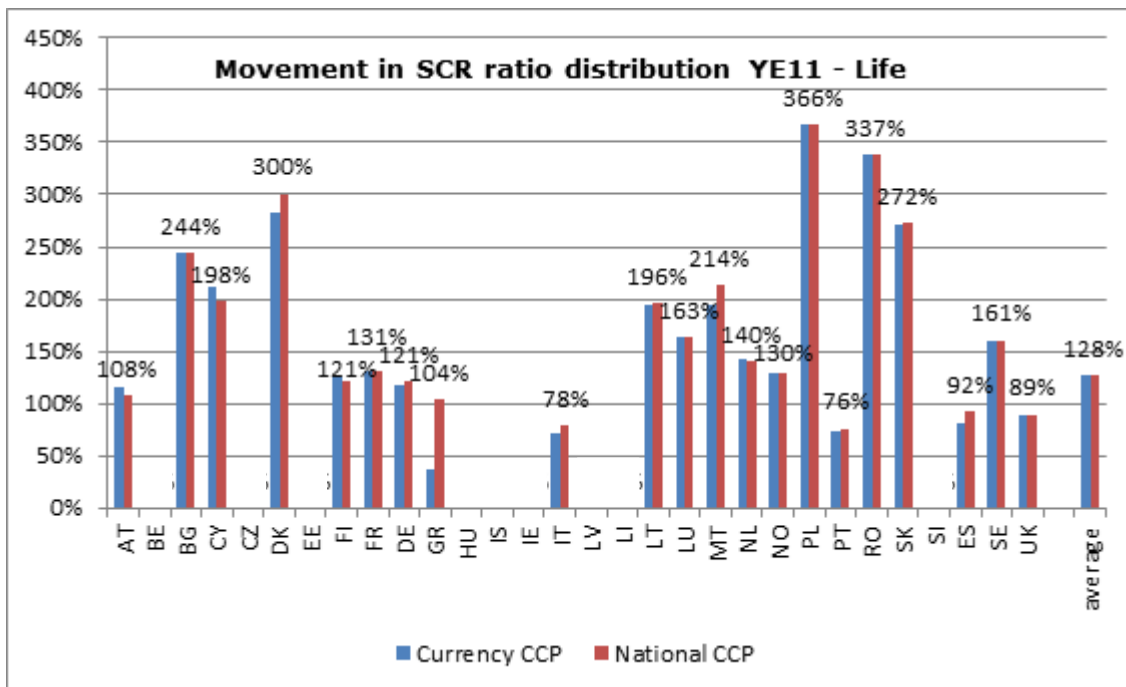


FIGURE 18: SCR RATIOS AT YE11 WITH APPLICATION OF NATIONAL AND CURRENCY CCP LEVELS - LIFE

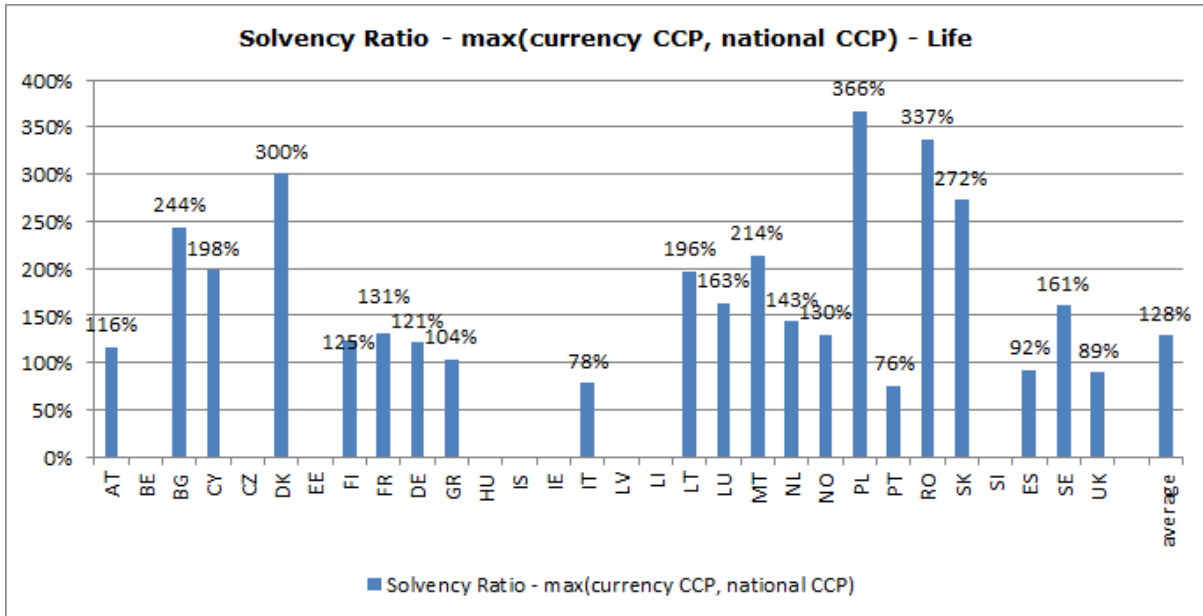


FIGURE 19: MAXIMUM SCR RATIO OF YE11 NATIONAL AND CURRENCY CCP - LIFE

### Non-Life undertakings

As opposed to the effect seen for Life business, the impact of a higher CCP on the SCR ratio is positive throughout the entire LTGA sample. This is related to the possibility of non-life undertakings to diversify away a significant part of the CCP risk charge with non-life risks.

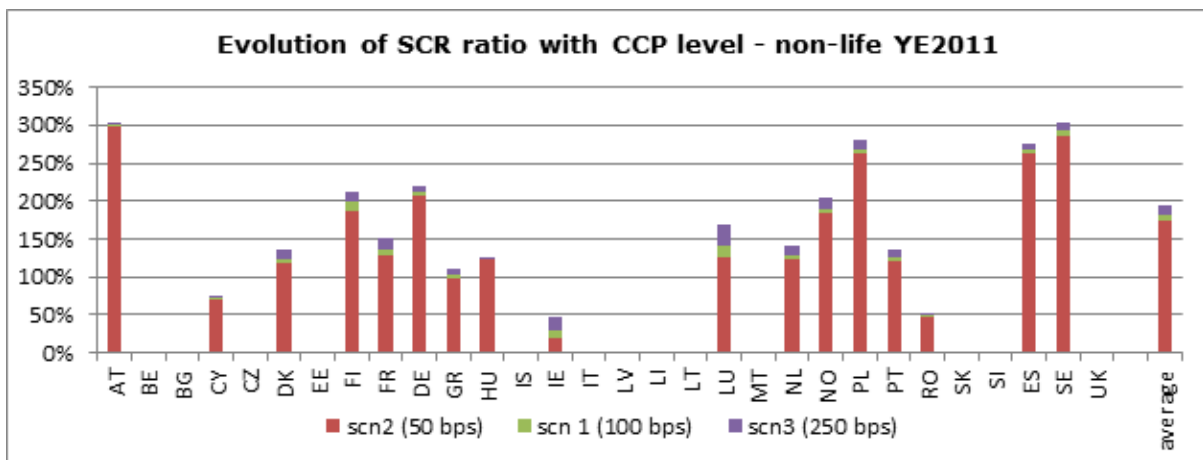



FIGURE 20: MOVEMENT IN SCR RATIO DISTRIBUTION FOR DIFFERENT CCP LEVELS TESTED AT YE11 – NON-LIFE

### Composites

For Member States where composite insurance undertakings play a significant role, the picture overlaps quite significantly with the analysis presented for the entire sample earlier in this section. (see Figure 12)

### 3.7.4. Group aspects

There may be some additional complexity relating to the application of the CCP at group level compared to solo level, especially if different CCPs would apply at group level for the same currency across subsidiaries (i.e. if national CCPs apply). It was furthermore mentioned by industry participants that an unpredictable CCP tool might pose a risk of



delays in the Solvency valuation process at group level as this could only start once all different CCP triggering decisions across the relevant jurisdictions have been taken.

### 3.7.5. National market insights

The impact varies by Member State depending on the level of the CCP and liability profiles.

### 3.7.6. Cross-border business

No particular provisions for the CCP application on cross-border business have been provided. This means that the CCP was applied to all insurance obligations, regardless of the currency of obligations or of the share of obligations sold outside the national market. For this reason, it is difficult to provide insights on the impact of the CCP measure for cross-border business.

However, in some Member States (e.g. LI, LU, IE, EE) and in some types of undertakings (e.g. reinsurers) cross-border business presents a significant part of the overall business. Applying any national CCP adaptation to their cross-border business could result in regulatory arbitrage. As the currency adaptation is linked to the currency of liabilities, this would most likely apply for cross-border business, but it is not yet clear how undertakings would treat liabilities written in a mix of currencies, i.e. whether they would need to apply several currency CCPs.

### 3.7.7. SII balance sheet volatility

The CCP was ranked by some LTGA participants as the best of the tested LTG measures to reduce the short-term volatility in case it could be made operational, especially for those Member States where the Matching Adjustment has not been applicable due to the strict eligibility criteria.

Based on analysis of the assessment results, the CCP is a tool which could reduce the volatility of Own Funds and Capital Surplus in distressed financial market situations. However, as indicated this effect can only be achieved with a well-functioning triggering mechanism and a smooth phase-out of the measure thereafter. Any sudden trigger of the CCP increases the short term volatility of Own Funds.

## 3.8. Impact on competition

EIOPA sees three potential sources of competitive distortions linked to the application of the CCP relation to unfair treatment of:

- Undertakings in one market where any type of CCP applies;
- Member States in the Eurozone if no national CCP would apply;
- Cross-border business in case a national CCP would apply.

### *Undertakings in one market where any type of CCP applies*

As the CCP is based on a market average reference portfolio, it is quite likely that the CCP adaptation will provide unfair relief to the different undertakings within a market applying the same level of CCP. However, given the need to disclose the CCP impact it seems reasonable to assume that mainly undertakings that really need a CCP would



apply it. In this case, it still needs to be assured that CCP applicants do not have any advantage over undertakings that have decided not to apply a CCP.

Furthermore, for non-life undertakings with typically short-term liabilities the application of a CCP could be discouraged as the impact on technical provisions is not material enough to justify its implementation. This might create competitive distortions between pure non-life undertakings and composites.

#### *Member States in the Eurozone if no national CCP would apply*

The sole application of a currency specific CCP in the Eurozone might lead to an unfair distribution of CCP relief across different countries in case certain countries are more impacted by the distress than others. This might lead to a situation where some MSs get too much relief from the CCP and others not enough. The background to this issue is the potential large difference in national investment portfolio compositions mainly linking to the “home bias” on government bond holdings. (It should be noted that due to the current limitations of information from financial markets it is not possible to distinguish the spreads for corporate bond holdings across different Member States for the CCP calibration.)

Similarly, it is possible that smaller Member States could experience disadvantages of a currency specific CCP as the representative portfolio for the Euro currency will tend to be weighted towards the portfolios of larger Member States.

#### *Cross-border business in case a national CCP would apply*


The application of a national specific CCP may provide advantages for insurance undertakings in one national market over another national market depending on the degree of stressed national situations. However, consequences of this are relatively limited apart from those that relate to cross-border business. Therefore, cross-border business would most likely need to be excluded from the application of a national CCP.

### **3.9. Impact on Long Term Investments**

Given that the CCP is per definition only applied under stressed market conditions, the impact on the general long-term investment behaviour is seen to be comparatively small. Such behaviour is certainly not discouraged by the measure as in times of distress, the CCP level will depend on the average duration of the bond investments within the representative portfolio, i.e. the tool adequately accounts for the characteristics of long-term bond investments in the spread calculation.

It is even possible that the potential availability of a CCP in a stressed market environment might reduce some concerns insurance undertakings might have when binding their capital for a very long period in largely illiquid bonds. However, it should always be kept in mind that this only works if the respective investments also are part of the representative portfolio.

Regarding infrastructure and similar types of investments, they could be generally included in the representative portfolio if their economic substance meets the requirements legally set out for all investments in general. Furthermore, the relevant portion of the spreads on such type of investments may be allowed for the adaptation



provided the instrument meets the same requirements valid for bonds, having in mind the economic substance rather than its legal form.

### 3.10. Other considerations

#### *Reputational risk for involved stakeholders*

EIOPA sees a high risk of damage to the reputation of European insurance supervisors linked to the triggering of this crisis tool in times of distress, especially when the distress links to high spreads on government bonds or when the distress links to issues outside of the EU.

#### *Product availability*

A number of industry participants stated very generally that the absence of sufficient measures to address periods of short-term volatility would have negative impact on the offer of long-term insurance products. This comment obviously relates to the CCP as well as to other LTG measures.

#### *Alternative approaches*

Some NSAs believe that there may be appealing alternative approaches in arriving at an appropriate countercyclical element in Solvency II, that are currently not explored, e.g. a symmetric safety buffer mechanism or the use of a simple index like ECB AAA and others to determine the adjustment to the risk-free rate curve. Other NSAs consider that the tested tool could be made operational by changing the calibration and eliminating the need for triggering.

#### *Further aspects*

Quick and efficient triggering processes are crucial for the appropriate functioning of the tool. Supervisors should therefore be provided with all rights needed to ensure this.

The calibration of the CCP risk might be complicated for internal model users due to the lack of historic data related to the loss of a CCP. This issue could potentially be overcome by prescribing the same calibration for IM users that is applied within the SF.

The methodology applied to determine the CCP levels for the purpose of the LTGA and particularly in respect to the portion of the spread not linked to short-term volatility (“fundamental spreads”) was closely linked to the approach applied for the matching adjustment.

Regarding the impact of the CCP under a variety of scenarios for the duration of the stressed situation of financial markets, section 3.2 should be noted (paragraph on “Potential long-term application”).

### 3.11. Main technical findings on the CCP

The main positive aspects of the tested CCP approach are:

- It could reduce “artificial volatility” of Own Funds in distressed market situations and might prevent forced sales of distressed assets due to capital shortfalls if a smooth triggering mechanism can be operationalised;

- It provides supervisors with the possibility to collectively address a short-term issue across the entire market;
- Its application results in a relatively high comparability of results based on the need to disclose the full impact;
- Implementation efforts are low to medium for undertakings and NSAs;
- Generally providing adequate risk management incentives as linked to representative portfolio (but see point on holding of “home” government bonds for national CCP).

However, the tested approach has a number of shortcomings mainly related to effective supervision, financial stability and competition:

- It is a crisis measure specifically designed to overcome spread-related crises; for any other crisis situations, it seems less effective;
- The currency option is seen as little effective for Member States suffering from a distress, while the national option might result in competition issues where to cross-border application has a material impact (for the time being this may be considered immaterial at European level);
- The effectiveness is limited for many life and composite undertakings in terms of SCR ratio impact, because of the current calibration of the CCP sub-module;
- The measure only functions appropriately if a smooth triggering process can be assured; this is unlikely in times of distress in certain markets given the potential implications of a CCP announcement by NSAs or EIOPA;
- Incentive given by the national CCP option to sustain or even increase holdings of “home” government bonds in times of distress and to refrain from cross-border business;
- Asymmetry of a crisis measure only providing relief in crisis times, potentially causing under-capitalisation of the sector;
- Unpredictability of the tool;
- Large changes of the balance sheet and SCR after activation and de-activation of the CCP.

### *EIOPA's main observations and technical advice on the CCP*

#### **EIOPA's main observations on the CCP:**

While the tested CCP measure proved to be technically effective in terms of reducing the impact of short-term volatility on own funds of (re)insurers, it has two major draw-backs relating to the broader effectiveness and financial stability implications.

The first major draw-back is that the use of the CCP significantly increases the capital requirements of undertakings in a number of Member States, especially for higher levels of CCP, ultimately resulting in limited or even negative impact on the solvency ratios for those Member States.

The second major draw-back is related to the triggering process which needs to be effective on one hand and not create or deepen financial stability concerns on the other hand. Regarding the effectiveness, a smooth triggering process is vital for the measure to reduce the impact of short-term volatility. If such a process cannot be ensured, the measure could increase rather than decrease the impact of short-term volatility on (re)insurers' Solvency II balance sheets. It is very questionable whether EIOPA or



National Supervisory Authorities will be able to really activate the application of a crisis measure such as the CCP in certain situations (e.g. sovereign crises). And if it can indeed be activated, this announcement might result in possible severe implications for financial market stability.

Thus, the tested CCP measure involving the given CCP risk methodology and the non-automated triggering does not seem suitable to adequately reduce the impact of short-term volatility in practice and is therefore unlikely to fulfil its overall financial stability aim.

**EIOPA's technical advice on the CCP:**

Based on the outlined concerns relating to the effectiveness of this crisis measure and to potential financial stability considerations, EIOPA advises to **replace the CCP with a predictable volatility adjustment mechanism ("Volatility Balancer")**. This mechanism would still be based on the same (or very similar) representative portfolios applied for the currency CCP. In addition, it would also include an option to enact the measure based on a national representative portfolio in case the "national" spread significantly exceeds the "currency" spread.

The resulting adjustment to the risk-free rate curve should furthermore only impact the level of own funds, but should keep the remainder of the balance sheet and the capital requirements calculations unchanged.

It should further be noted that the Volatility Balancer might turn negative under certain conditions. However, this will depend on the final calibrations of the device.

This approach would not only increase the general effectiveness of the measure on SCR ratios and reduce the effort of undertakings related to producing two full sets of solvency positions. It would also overcome the issues related to triggering, non-predictability and to a certain extent also the "home" bias and cross-border issues. Another main advantage is that this option limits the volatility of the balance sheet much better as it is not triggered suddenly.

Further insights on the Volatility Balancer concept as well as reference calibrations by EIOPA are contained in Section 9.11. In addition, Section 10.1 provides an impact analysis with regards to the Volatility Balancer and the proposed reference calibrations for all Member States that have participated in the LTGA.



## 4. Extrapolation

### 4.1. Purpose of the measure and highlights of the tested approach

#### *General concept*

Insurance obligations may have a longer term to maturity than the assets available in the market to determine the term structure of the interest rate used for the valuation of technical provisions. Extrapolation is a method to define the risk-free rate term structure for maturities, for which no reliable market data exists (i.e. when financial markets for bonds or for reference instruments cannot be considered to be active, deep, liquid and transparent anymore). The last point where an active, deep, liquid and transparent market observation can still be made is referred to as the Last Liquid Point (LLP) in this report. For Solvency II, a macroeconomic extrapolation method will be chosen, i.e. the forward rates converge to a (macroeconomic) long term equilibrium rate (the ultimate forward rate or UFR) in a specified period of time, the so-called convergence period.

It is possible to analyse the impact on the value of technical provisions of a specific extrapolation method and the relevant parameters. EIOPA applies the Smith-Wilson method for extrapolation, whereby the forward rates converge to the UFR and from which a spot curve is derived. The spot rate thus also converges to the level of UFR, but more slowly than the forward rate.

#### *Tested approach*

Firstly, it should be noted that the LTGA ToR stipulated that only a proposal for the speed of convergence should be tested. Where comments were received on other matters than the speed of convergence, they are summarised in this section but no position is stated.

The LTGA involved the testing of different scenarios. Table 6 provides an overview of the parameters used for the extrapolation of the risk-free curves applied for each of the scenarios calculated in the LTGA. As stated above, the aim of all these calculations with regards to extrapolation was testing different levels of convergence speed (between 10 and 40 years).

For this chapter, it should be noted that the key extrapolation scenarios 1 and 5 did not test the measure in isolation. Therefore, quantitative effects presented in section 4.7 are also impacted by other measures, most notably the CCP, which in both scenarios has a value of 100 basis points which resulted in an upwards shift of the risk-free rate curve of 100 basis points before extrapolation.

The UFR was set at 4.2% for all currencies as a simplification for this exercise. This was based on the macroeconomic long-term equilibrium of long-term interest rate plus long-term inflation. The UFR level as applied in the LTGA should not be seen as a final calibration.

| Currency               | Abbr. | Bloomberg code of ref. instr. | LLP (Y) | Credit rate adjustment (bps) |      |      | UFR (%) | Convergence Speed (Y) |                     |
|------------------------|-------|-------------------------------|---------|------------------------------|------|------|---------|-----------------------|---------------------|
|                        |       |                               |         | YE11                         | YE09 | YE04 |         | Scenario 0 & 5        | Scenario 1-4 & 6-12 |
| Euro                   | EUR   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| British pound          | GBP   | BPSWYY                        | 50      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| US Dollar              | USD   | USSWYY                        | 30      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Japanese Yen           | JPY   | JYSWYY                        | 20      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Swiss Franc            | CHF   | SFSWYY                        | 15      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Swedish Krona          | SEK   | SKSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Danish Krone**         | DKK   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Norwegian Krone        | NOK   | NKSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Czech Koruna           | CZK   | CKSWYY                        | 15      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Polish Zloty (1)       | PLN   | C119XX                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Hungarian Forint       | HUF   | HFSWYY                        | 15      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Romanian Lei           | RON   | RNSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Bulgarian Lev          | BGN   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Turkish Lira           | TRY   | TYSWYYV3                      | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Iceland Krona*         | ISK   | IKSWYY                        | 5       | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Estonian Kroon         | EKK   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Latvian Lats           | LVL   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Lithuanian Litas       | LTL   | EUSAYY                        | 30/20   | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Canadian Dollar        | CAD   | CDSWYY                        | 20      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Australian Dollar      | AUD   | ADSWYY                        | 30      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Singaporean Dollar     | SGD   | SDSWYY                        | 20      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Malaysian Ringgit*     | MYR   | MRSWYY                        | 5       | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| South Korean Won*      | KRW   | KWSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Thai Baht*             | THB   | TBSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Hong Kong Dollar       | HKD   | HDSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Taiwanese Yuan*        | TWD   | NTSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Chinese Yuan Renminbi* | CNY   | CCSWYY                        | 15      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| South African Rand     | ZAR   | SASWYY                        | 30      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Mexican New Peso       | MXN   | MPSWYY                        | 20      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Indian Rupee*          | INR   | IRSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |
| Brazilian Real*        | BRL   | BCSWYY                        | 10      | 35                           | 20   | 10   | 4.2     | 40                    | 10                  |

\* For these currencies data are not available at this stage, i.e. no discount curves are provided.

\*\* Treated as currency pegged to the euro.

(1) For the Polish zloty government bond curves are used instead of swap curves.

**TABLE 6: OVERVIEW OF THE PARAMETERS USED FOR THE EXTRAPOLATION PER CURRENCY AND SCENARIO**

### Role of convergence speed

If the *spot rate at the LLP is below the UFR* (e.g. the case of currency A in Figure 20 below), a rapid convergence will lead to a higher discount rate after the LLP and therefore a lower value of technical provisions than a slower rate of convergence. In the context of the LTGA, for YE11, for 11 European currencies out of 14, the spot rate at the *LLP was below the UFR* which was set to 4.2% for all currencies.

In general, for a *spot rate at the LLP above UFR* (e.g. the case of currency B in Figure 20 below), a rapid convergence will lead to a lower discount rate after the LLP and therefore a higher value of technical provisions than a slower rate of convergence. In the context of the LTGA, for YE04, for all European currencies except the Suisse Franc, the spot rate at the *LLP was above the UFR* which was set to 4.2% for all currencies.

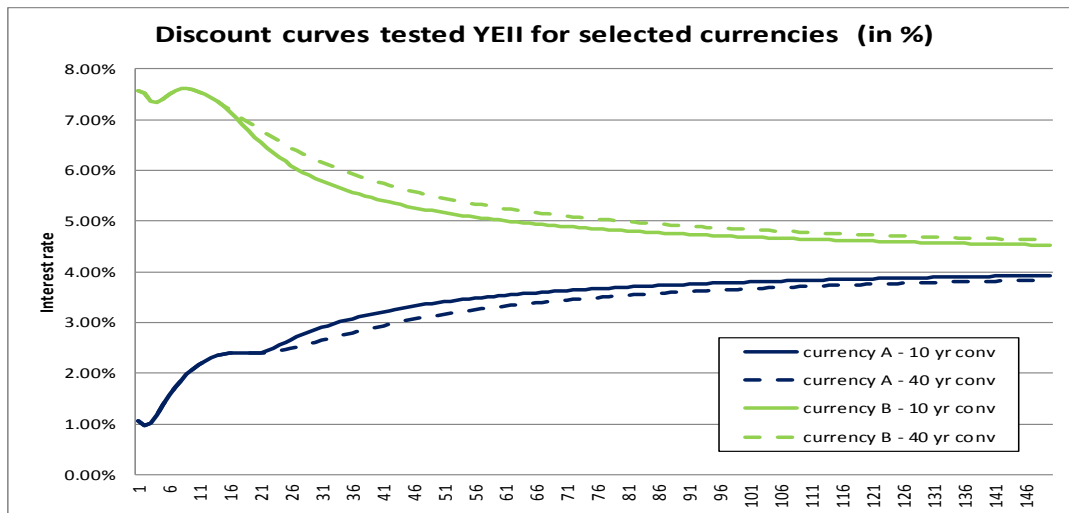


FIGURE 21: CONVERGENCE PERIOD COMPARISON WITH SPOT RATE AT THE LLP BELOW OR ABOVE UFR

## 4.2. Impact on policyholder protection

The implementation of LTG measures affecting Pillar 1 may lead to an increase or decrease of the interest rate term structure and thus to a decrease or an increase of the technical provisions. This can affect policyholder protection to the extent that an overly optimistic presentation of the financial position arising from use of such measures may delay supervisory intervention. With regards to extrapolation, as was seen for a number of currencies at the LTGA reference date of YE11, this applies when the UFR is significantly higher than the spot rate at the LLP, but not in the reverse situation.

Several NSAs indicated that a quick convergence to the UFR of 4.2% heightens this policyholder concern especially under current generally low yield conditions.

Other NSAs pointed out that since a short convergence period leads to more predictable valuation of technical provisions, a faster speed of convergence is likely to benefit policyholders because it enables a more long-term perspective of the investment horizon and asset management. Also, investments will not be unnecessarily locked into low yielding investments, which is not in the interest of policyholders.

## 4.3. Impact on effective and efficient supervision

### *Supervisory review process*

Compared to the other LTG measures, NSAs indicated that the supervision of the method chosen for extrapolation was relatively straightforward, irrespective of the exact approach and parameters chosen.

On the other hand, some NSAs expressed concerns that an extrapolation method which ignores market information beyond the LLP may deviate from an optimum use of market information (market consistency) and lead to supervisory complexities, in particular where firms appropriately incorporate such information in their risk management. Firms may well base their risk management, and ORSA on an economic view that integrates market information beyond the LLP. A problem may also arise in the context of internal models and the use test as the market consistent inputs vary from the regulatory assumptions.



### *Potential delay in supervisory action*

As indicated under policyholder protection, there is a general concern that an overly optimistic determination of the financial position will delay effective and timely supervisory intervention.

In this respect, some supervisors pointed out that they may require information about the financial position of undertakings both with and without any LTGA measures including Extrapolation. This raises the issue as to the supervisory measures that could be deployed.

### *Overcoming volatility*

The extrapolation technique and the parameters used in each technique have a strong influence on the variability in time of technical provisions of insurance contracts providing long term guarantees. Even within the same method, not all approaches provide the same level of stability as not all approaches make the same use of market information. An appropriate balance is necessary in order to make compatible on the one hand financial stability (overcoming volatility) and on the other hand a realistic valuation according to market practices (prevention of bad risk management incentives).

The impact of this balancing act in each European market may vary to a great extent pending on the characteristics of the insurance contracts available in those markets (in particular, the duration of cash flows and participation features).

## **4.4. Implementation effort**

### *For industry*

The majority of the participants that commented stated that the particular choice of the extrapolation method would not lead to any substantial implementation efforts and costs. However, some undertakings pointed out that there may be complexities if the extrapolation is not sufficiently market consistent. The main concerns are about consequences for risk management if there is a difference between their own view on economic risks and the regulatory approach. Issues may arise with hedging strategies and calibration of economic scenario generators (ESGs).

### *For NSAs*

NSAs generally do not see significant direct costs of implementation with regard to the extrapolation.

### *For EIOPA*

The exact parameterisation for the extrapolation is not expected to require any substantial additional effort by EIOPA.

## **4.5. Incentives for good risk management**

### *Interaction with the choice of LLP*

It should be noted that most comments provided by NSAs on the issue relate to the extrapolation for the Euro (and pegged currencies) as the tested scenarios did involve a fixed parameterization of the LLP for all other currencies. Due to the recurrence of those comments, they are summarized below. Nevertheless, since the LTGA exercise does not relate to the LLP, no position is stated.



Some NSAs and insurance undertakings expressed a firm preference for an LLP of 20 years and a rapid convergence to the UFR (e.g. 10 years). From a risk management perspective, they do not see an issue in disincentivising asset-liability matching beyond the LLP as they believe that there are insufficient appropriate assets (from active, deep, liquid and transparent markets) for maturities in excess of 20 years anyway.

On the contrary, other NSAs and insurance undertakings believe that there are sufficient appropriate long dated assets to back obligations of long maturity. They are concerned that the regulatory discount curve will be further out of line with their own assumptions based on what they still consider to be reliable market data, but a faster convergence will disregard this. In that case, adequate risk management will be disincentivised because strategies which involve holding assets matching liabilities will result in higher volatility of the regulatory solvency ratio, as a consequence of a shorter convergence period.

Further concerns raised include the risk of a substantial misvaluation of the value of options and guarantees, a possible misalignment between the assumptions in the ORSA and the regulatory Pillar 1 assumptions, and the construction and use of internal models.

From a purely technical point of view, where the LLP is short, a short convergence period as well leads to an extrapolation that produces more stable valuation of technical provisions, but more likely to materially diverge from the market prices observed beyond the LLP.

#### *Interaction with the choice of UFR*

There is an intrinsic close interlink between the LLP, the convergence speed and the UFR. In other words, the level of each of these parameters may have a material influence by increasing/reducing the impact of the others parameters for the extrapolation of the risk-free curve (and hence on the level of the technical provisions).

Therefore it is necessary to have in mind LLP and UFR functioning, when analysing or making decisions in respect of the speed of convergence, in order to ascertain an appropriate overall output.

#### *Other aspects*

The results of the extrapolation method applied for the LTGA exercise depend to a material extent on the market price observed in the LLP and of the previous observed risk-free rates (since they implicitly derive the last forward rate within the liquid part of the curve). This raises the chance of a potential dislocation of the forward curve around the last liquid point as firms seek to trade around the last liquid point to hedge their balance sheet (and hence this exposes the framework to the risk of an 'intended volatility').

Although it was not in the scope of the LTGA exercise and direct questions on this point were not addressed to participants, some stakeholders flagged that an appropriate treatment of errors and outliers by EIOPA will prevent this risk, while others advocate for a methodological amendment (e.g. using a smoothed approach, applying a weighted average for a number of different yearly data points of the extrapolated part of the curve).

## 4.6. Impact on financial stability and prevention of systemic risks

Some NSAs hold the view that a last liquid point of 20 years for the Euro and a rapid convergence to the UFR is necessary or desirable as it reduces the volatility of the technical provisions and thus supports financial stability of the insurance sector.

Other NSAs have taken a more critical view. They mentioned that an overly optimistic presentation of the financial position may delay supervisory intervention to the detriment of financial stability. This relates to the risk that the “artificial volatility” may in fact not be artificial and systemic market issues may be masked, e.g. if the low yield environment persists for a lengthy period, the assumptions underlying the regulatory regime may prove to have been overly optimistic leading to systematic risk. This applies notably to extrapolation when there is convergence to a UFR which proves higher than the long-run realised risk-free yield.

A further point mentioned is that a more stable interest rate term structure for regulatory purposes may decrease the demand for long dated bonds since there is less need to hedge volatility at long end of the curve. This could have an impact for financial markets given the strong role of insurers as long-term investors. This behavioural incentive may have, in the view of some NSAs, the potential to distort the yield curve with financial stability implications.

## 4.7. Impact on (re)insurance undertakings' solvency position<sup>9</sup>

### 4.7.1. All undertakings

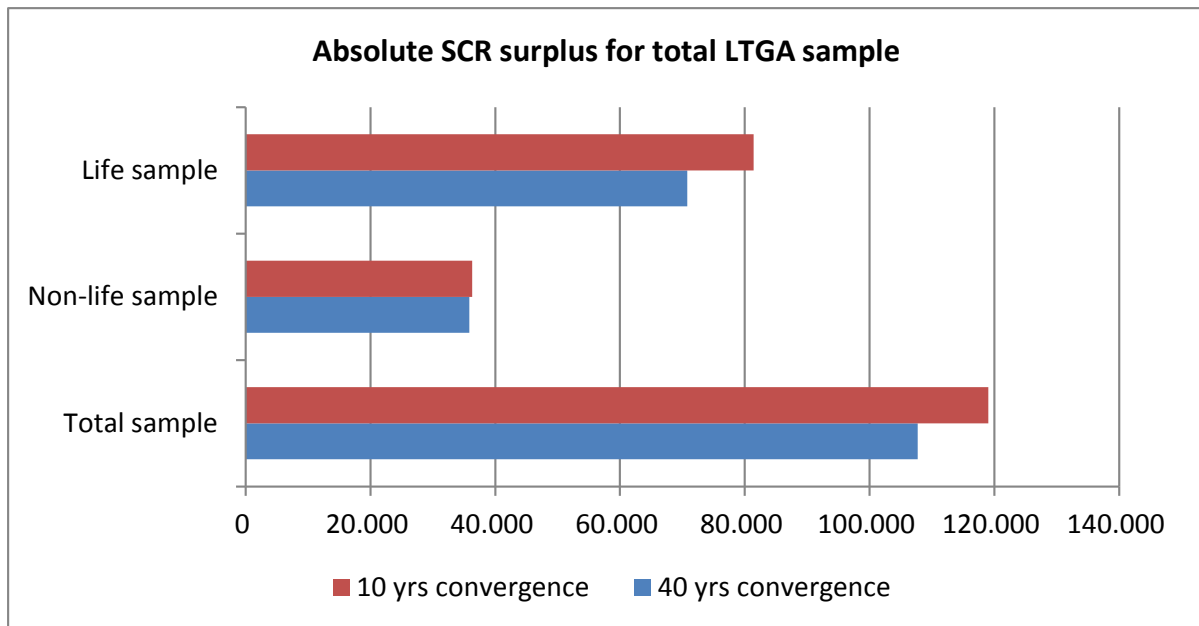
#### *Results of quantitative industry assessment*

The LTGA calculations enable a direct comparison for a variation of the speeds of convergence in the extrapolation by comparing the outcomes of the tested scenarios 1 and 5. The only difference between these scenarios is a difference in the convergence period between 40 years in scenario 5 and 10 years in scenario 1 for all currencies. The impact on the absolute SCR surplus (i.e. own funds eligible for the SCR minus the SCR) is shown in Figure 21. Only insurers that provided the outcomes for both scenarios are included in this graph.

For most insurance undertakings or Member States, the spot rate of the relevant currency at the respective LLP was below the UFR of 4.2%, at the reference date of YE11. A more rapid convergence speed therefore results in a higher interest rate term structure and in a lower value of technical provisions. The SCR surplus for the scenario with a convergence period of 10 years is thus higher than for the scenario with convergence in 40 years.

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<sup>9</sup> It should be noted that all analysis shown in this section is based on the “Base scenarios” of the LTGA, i.e. undertakings have applied the following LTG measures alongside the extrapolation approach: the “classical” MA Standard version, the Extended MA Standard I version, and a 100 bps CCP.



**FIGURE 22: SCR SURPLUS IMPACT OF DIFFERENT CONVERGENCE SPEEDS (SCENARIO 1 VS SCENARIO 5 RESULTS)**

The impact is noticeably larger for life undertakings (including composites) because life undertakings have a longer duration of liabilities compared to non-life undertakings.

Figure 22 and Figure 23 show the impact of the choice of convergence period on the SCR and MCR ratios by Member State. The bars represent the difference in ratio when moving from a 40 year convergence period to a 10 year convergence period. A positive change means that the ratio is higher under a 10 year convergence period. It can be seen that for some currencies a more rapid convergence produces an increase in ratio; and for others a decrease. This reflects the relative position of the spot rate at LLP and the UFR.

The two graphs further show very clearly the importance of the choice of LLP. For the GBP the effect of a different convergence speed is negligible for two reasons: (a) the GBP has a LLP of 50 years (due to the long term nature of the asset market in GBP), and (b) the weight of cash flows after 50 years is very small. The effect of a different convergence speed is highest for currencies with a relatively early LLP (e.g. 10 years) because the weight of cash flows from year 10 onwards is still important. The LLP applied for the Euro during the LTGA was 20 years. The corresponding effect of a different convergence speed is moderate. However, for some countries within the Eurozone where the cash flows beyond 20 years maturity are material, the impact is higher.

However, the fact that the extrapolation approach was not tested in isolation from other measures, most notably the CCP, should be taken into account. For the Euro at YE11, the 100 bps default value of CCP tested in the scenarios 1 and 5 did move the LLP closer to the UFR level. Without a CCP, the difference in impact on MCR/ SCR of both convergence periods for the Euro Member States might have been higher.

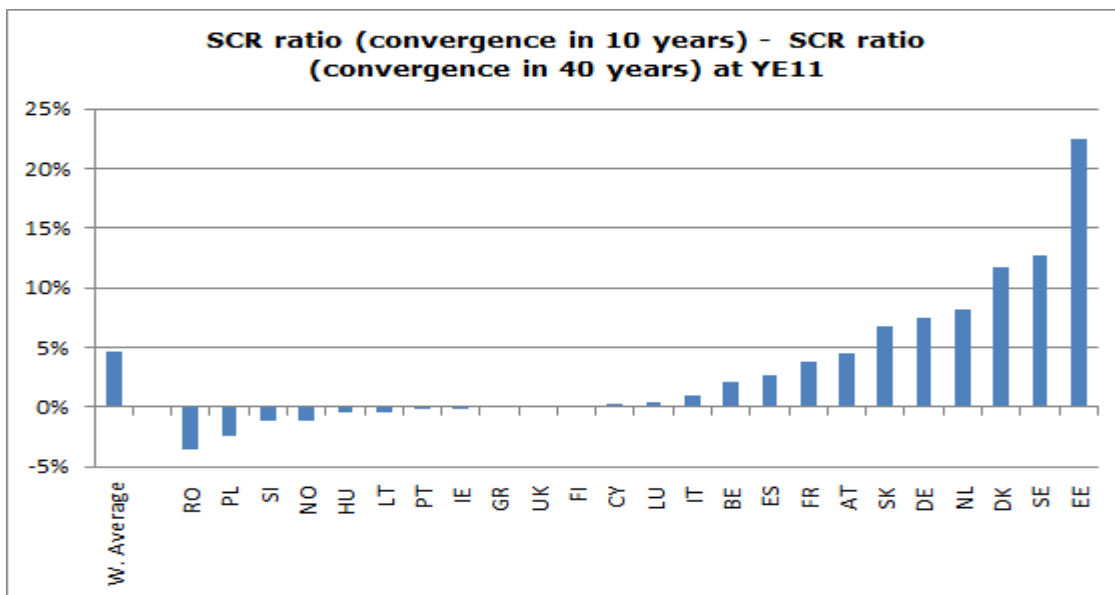


FIGURE 23: SCR RATIO DELTA DISTRIBUTION FROM 10 TO 40 YEARS CONVERGENCE

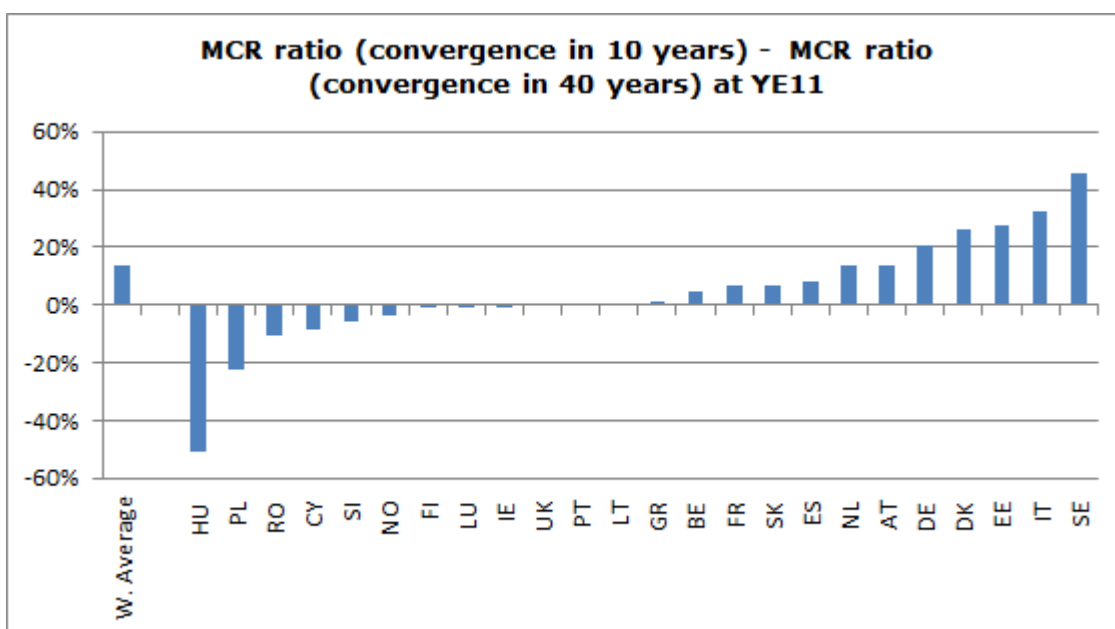


FIGURE 24: MCR RATIO DELTA DISTRIBUTION FROM 10 TO 40 YEARS CONVERGENCE

### Modeled analysis using hypothetical portfolios

#### Background to this analysis

As mentioned above, the existence of several LTG measures in the LTGA implies that it is difficult to assess the impact of the extrapolation in isolation. For example, the level of CCP will influence the level of the spot rate up to the LLP and also impact the effect of the exact extrapolation parameterisation chosen.

In addition to the analysis provided by undertakings in scenarios 1 and 5, EIOPA has therefore performed a modelling exercise to determine the impact of some extrapolation options on a number of hypothetical cash flow patterns. This enables an analysis of the sensitivity of these assumptions.

### Hypothetical portfolios chosen

In total, six hypothetical portfolios were developed. These are designed to be an archetypal representation of the cash flows of European insurance undertakings with a relatively short, medium, or long duration, and with two different shapes of the cash flow pattern: decreasing, or first increasing and then decreasing. The exact modified durations of course depend on the interest rate term structure employed.

|   | Short maturity   | Medium maturity   | Long maturity     |
|---|------------------|-------------------|-------------------|
| Decreasing cash flows                     | A1<br>Duration 8 | A2<br>Duration 11 | A3<br>Duration 16 |
| Increasing and then decreasing cash flows | B1<br>Duration 8 | B2<br>Duration 13 | B3<br>Duration 20 |

TABLE 7: HYPOTHETICAL PORTFOLIOS TESTED

For the life companies participating in the LTGA the modified duration of the insurance obligation was on average around 10 years. The highest duration (for Scenario 0) per country was around 15 years. Durations may of course vary more between undertakings.

### Term structures chosen

The impact of three pairs of different interest rate term structures was tested on each portfolio (using YE2012) which kept the LLP constant and varied the convergence period:

|  |            |           |                 |                                |
|--|------------|-----------|-----------------|--------------------------------|
| <b>PAIR 1:</b> effect of moving the convergence period from 10 to 40 years | Low yield  | CCP = 0   | LLP of 20 years | convergence period of 10 years |
|  | Low yield  | CCP = 0   | LLP of 20 years | convergence period of 40 years |
| <b>PAIR 2:</b> effect of moving the convergence period from 10 to 40 years | Low yield  | CCP = 100 | LLP of 20 years | convergence period of 10 years |
|  | Low yield  | CCP = 100 | LLP of 20 years | convergence period of 40 years |
| <b>PAIR 3:</b> effect of moving the convergence period from 10 to 40 years | High yield | CCP = 0   | LLP of 15 years | convergence period of 10 years |
|  | High yield | CCP = 0   | LLP of 15 years | convergence period of 40 years |

TABLE 8: PAIRS OF EXTRAPOLATION PARAMETERS TESTED

The graphs below illustrate the cash flow pattern and the two interest rate term structures for each pair of assumptions. The graphs show that the difference in interest rate term structure only occurs after the last liquid point. Short duration cash flows are therefore barely impacted by the choice of extrapolation parameter. The graphs also show the influence of the choice of the UFR at 4.2% in relation to the spot rate at the LLP: for Pairs 1 and 2 the spot rates are 'pulled upwards' towards the UFR; for Pair 3 the spot rates are 'pulled downwards'.

### Illustration of cash flow patterns and curves applied

The impact on the best estimate liabilities of these portfolios can be easily assessed. Even proportionally small effects on best estimate valuation can have large impacts in



terms of own funds, and solvency ratio. Therefore, in order to assess the impact on the Solvency ratio, EIOPA also created a hypothetical balance sheet and Solvency Capital Requirement. In the analysis a simplifying assumption was made that the asset values, SCR and risk margin remained unchanged. Any profit sharing was also assumed to be unchanged between scenarios. Taking into account future profit participation may reduce the calculated effect.

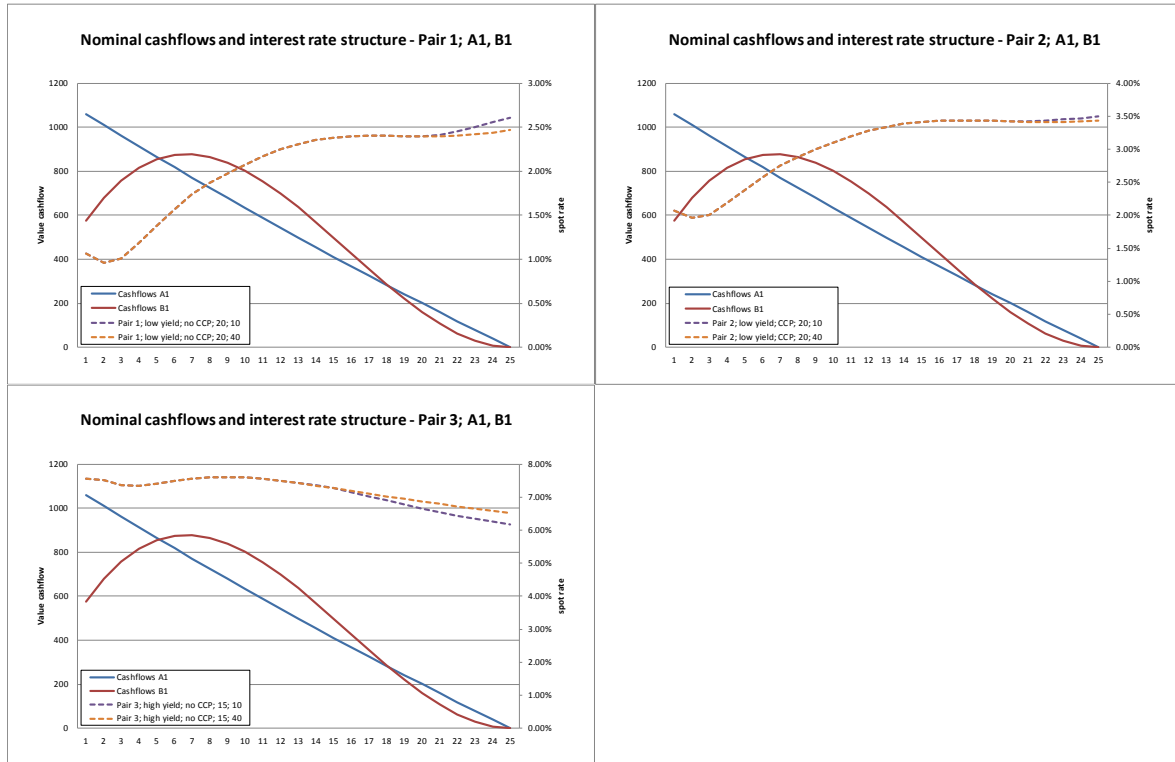


FIGURE 25: NOMINAL CASH FLOWS AND INTEREST RATES FOR SHORTER MATURITY PORTFOLIOS

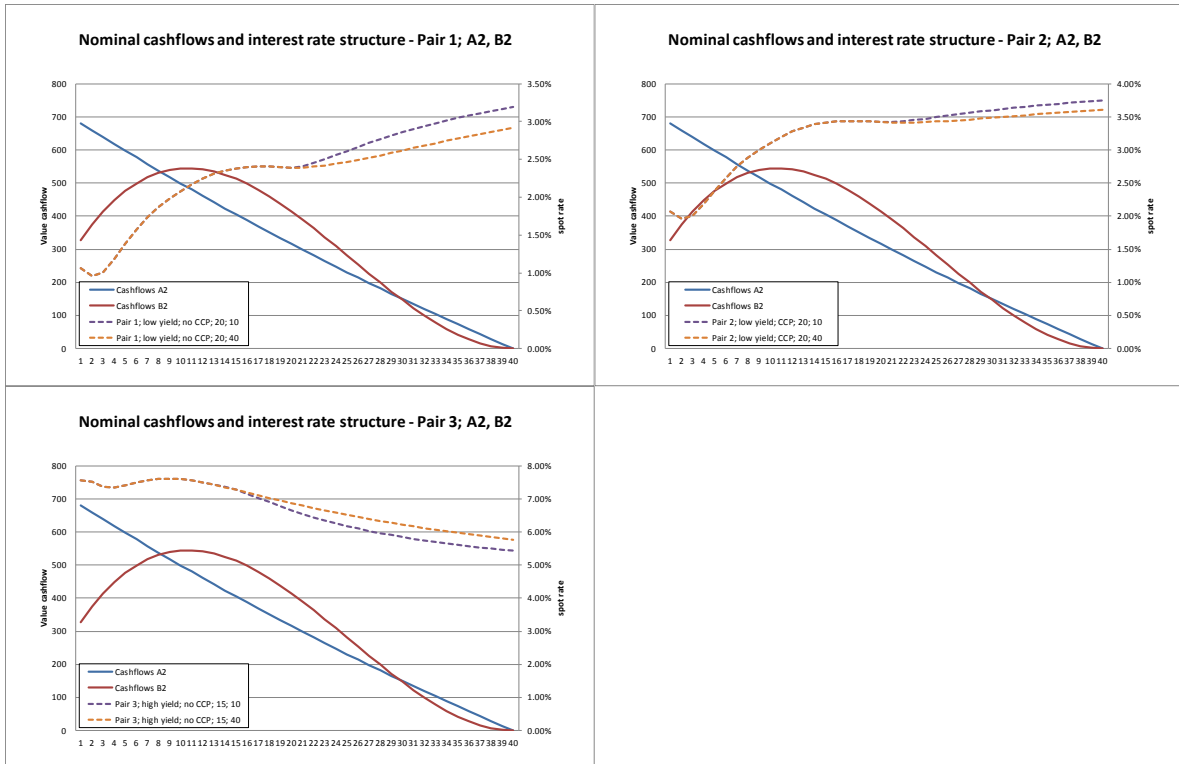


FIGURE 26: NOMINAL CASH FLOWS AND INTEREST RATES FOR MEDIUM MATURITY PORTFOLIOS

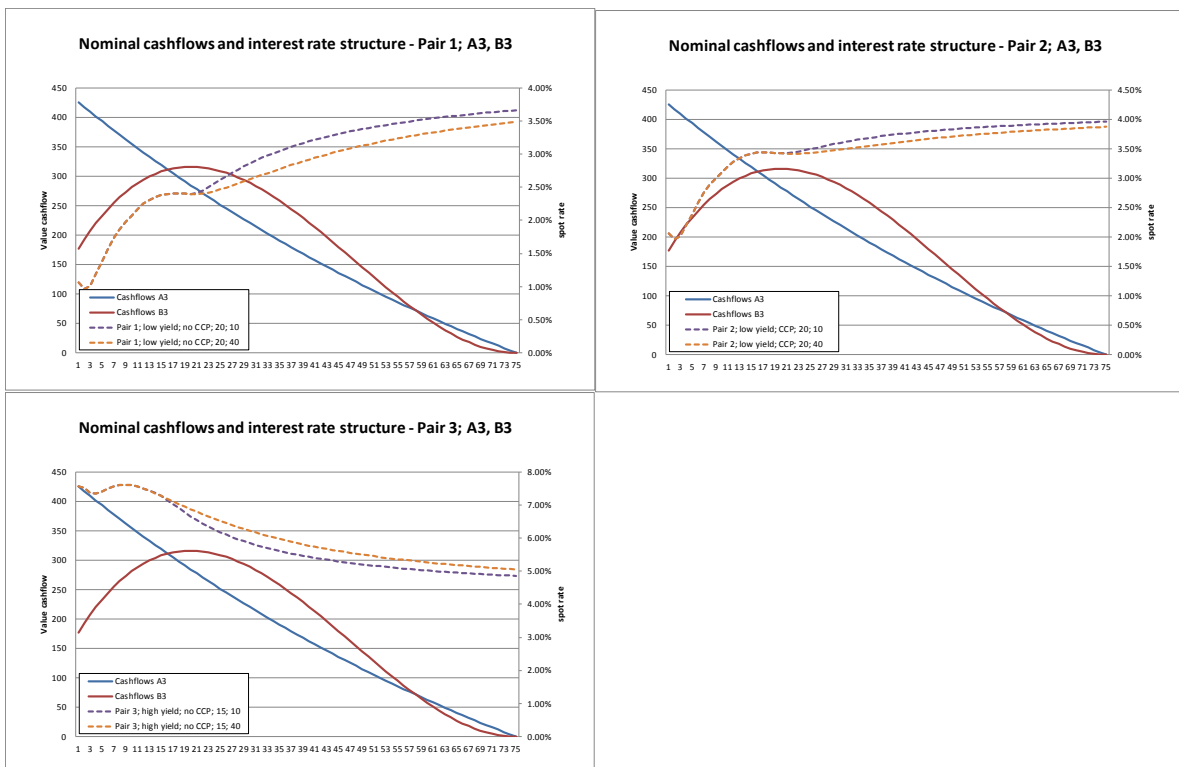


FIGURE 27: NOMINAL CASH FLOWS AND INTEREST RATES FOR LONGER MATURITY PORTFOLIOS

*Results of the simulation*

The table below shows the impact on the technical provisions of each of the hypothetical portfolios of changing from the first to second assumption within each pair of scenarios.

| Impact on TP as % of TP | Pair 1 | Pair 2 | Pair 3 |
|-------------------------|--------|--------|--------|
| A1 – Duration 8 yrs     | 0%     | 0%     | 0%     |
| A2 – Duration 11 yrs    | 0%     | 0%     | 0%     |
| A3 – Duration 16 yrs    | 1%     | 0%     | -1%    |
| B1 – Duration 8 yrs     | 1%     | 0%     | -1%    |
| B2 – Duration 13 yrs    | 2%     | 1%     | -2%    |
| B3 – Duration 20 yrs    | 3%     | 1%     | -3%    |

TABLE 9: SIMULATION IMPACT ON TECHNICAL PROVISIONS

In general, the impact of the four changes analysed – in the three different pairs of scenarios - is limited in terms of change in technical provisions. Example companies A1, A2 and A3 have decreasing cash flows. The effects are very limited for all pairs of scenarios. Example companies B1, B2 and B3 have cash flows which are first increasing and then decreasing. The effect here, expressed as percentage change of the technical provisions, is more noticeable but still limited.

Pair 1: The scenarios compared in Pair 1 relate to a low yield environment with no CCP, an LLP of 20 years and a tested impact of changing the convergence speed from 10 to 40 years. A longer convergence period means that the interest rate term structure after the LLP is moved downwards, leading to an increase of the technical provisions. The effect is largest for archetypical company B3, with long maturity and a cash flow pattern which first increases and then decreases.

Pair 2: The scenarios compared in Pair 2 also relate to a low yield environment, but now with a CCP, an LLP of 20 years and a tested impact of changing the convergence speed from 10 to 40 years. The inclusion of a CCP implies that the interest rate term structure is higher than in Pair 1, but with spot rates for the curve until the LLP still below 4.2%. The slower convergence scenario in Pair 2 also means that the interest rate term structure after the LLP is moved downwards, leading to an increase of the technical provisions. The effect here is smaller than under Pair 1; the convergence speed chosen has less effect since the spot rate is closer to the 4.2%.

Pair 3: The scenarios compared in Pair 3 relate to a high yield environment, with no CCP, an LLP of 15 years and a tested impact of changing the convergence speed from 10 to 40 years. The high yield environment means that the spot rates are above the 4.2% for the curve until the LLP. Extrapolation now means that the spot rates will be decreasing towards the 4.2%. A lower convergence speed now means that the interest rate term structure decreases more slowly after the LLP, and is thus higher after the LLP. This leads to a decrease of the technical provisions. The effect, again, is largest for example company B3, with long maturity and a cash flow pattern which first increases and then decreases.

In order to illustrate the effect in terms of the solvency ratio, a very simple example balance sheet was employed, with the proportion of technical provisions, own funds and SCR roughly based on the LTG average. The proportion is roughly assets 140, technical provisions and other liabilities 115, own funds 25 and SCR 20.5. The example solvency ratio is thus approximately 120%.

A relatively small percentage change in the technical provisions thus implies a much larger relative change in own funds and in the solvency ratio (expressed as percentage

points). The signs of the effects are of course opposite to those in the table on the change in value of the technical provisions. An increase of technical provisions *ceteris paribus* decreases own funds and thus the solvency ratio.

| Impact on solvency ratio<br>In percentage points | Pair 1 | Pair 2 | Pair 3 |  |
|--|--------|--------|--------|--|
| <b>Decreasing cash flows</b>                     |        |        |        |  |
| A1 – Duration 8 yrs                              | 0%     | 0%     | 1%     |  |
| A2 – Duration 11 yrs                             | 0%     | 0%     | 1%     |  |
| A3 – Duration 16 yrs                             | -3%    | -1%    | 4%     |  |
| <b>Increasing and then decreasing cash flows</b> |        |        |        |  |
| B1 – Duration 8 yrs                              | -3%    | -1%    | 5%     |  |
| B2 – Duration 13 yrs                             | -10%   | -4%    | 10%    |  |
| B3 – Duration 20 yrs                             | -14%   | -6%    | 16%    |  |

**TABLE 10: SIMULATION IMPACT ON SCR RATIOS**

A decreasing cash flow pattern (as per A1, A2 and A3) means that the effect of the choice of extrapolation parameterisation remains small, even in terms of solvency ratio. The effect is much larger where the cash flow pattern first shows an increase and then a decrease (as per B1, B2, and B3). In both cases the impact is larger for the longer maturity portfolios as would be expected.

### **Modeled analysis using LTGA cash flows**

#### *Background to this analysis*

Undertakings were asked to provide liability cash flows to EIOPA together with the results of the quantitative assessment. The quality of this cash flow data is most likely not consistently high. In the absence of other options to derive implications on Member State level, EIOPA has used these cash flows where provided to estimate the rough impact of different extrapolation approaches on technical provisions.

It should be noted that in many cases only a few undertakings per Member State have provided cash flow information, therefore those cash flows are not expected to be fully representative. However, EIOPA has performed high-level sense checks on the shapes of the cash flow pattern. To eliminate unwanted effects, the analysis focusses on life insurance cash flows excluding unit-linked and future discretionary benefits, i.e. the TP impact that has been estimated relates to the guaranteed part of obligations only.

Although below three charts are presented with different UFR (3.2%, 4.2% and 5.2%), the aim is not to assess the UFR, (since this is out of the scope of LTGA exercise) but to make explicit the necessity of understanding carefully the results and the relationship among LLP, convergence speed and UFR, as already mentioned above.

Results of this analysis

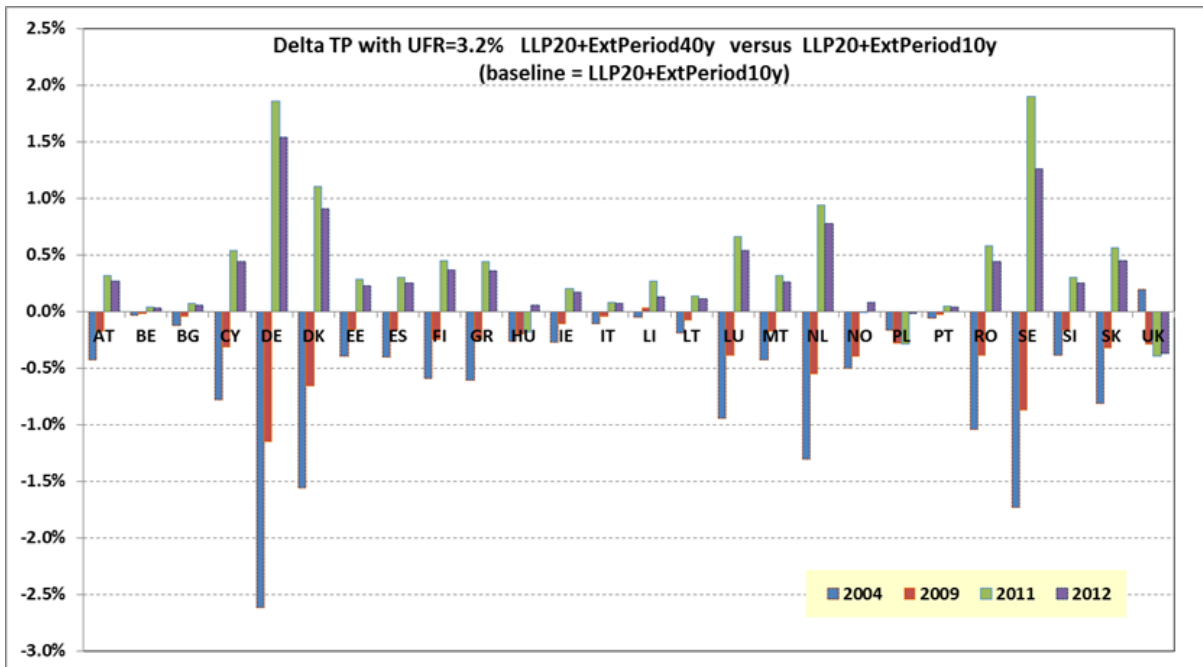


FIGURE 28: RELATIVE CHANGE IN TECHNICAL PROVISIONS WHEN ALLYING 40 YEARS CONVERGENCE VERSUS 10 YEARS CONVERGENCE (BASELINE) FOR DIFFERENT REFERENCE DATES, USING A UFR OF 3.2%

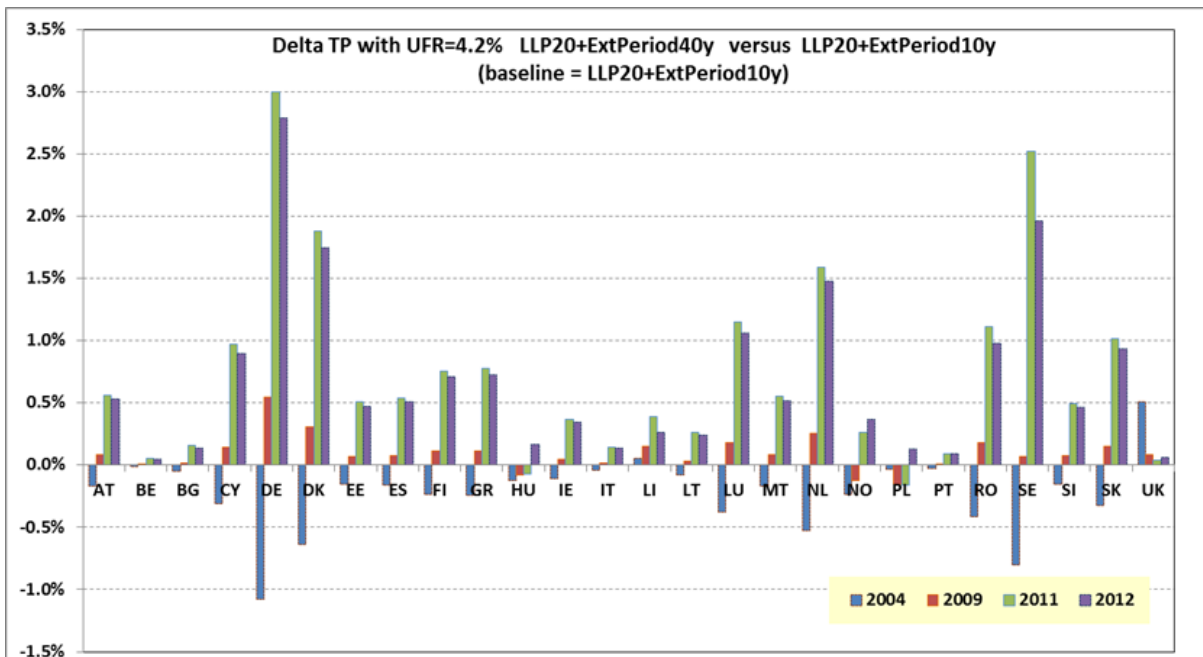


FIGURE 29: RELATIVE CHANGE IN TECHNICAL PROVISIONS WHEN ALLYING 40 YEARS CONVERGENCE VERSUS 10 YEARS CONVERGENCE (BASELINE) FOR DIFFERENT REFERENCE DATES, USING A UFR OF 4.2%

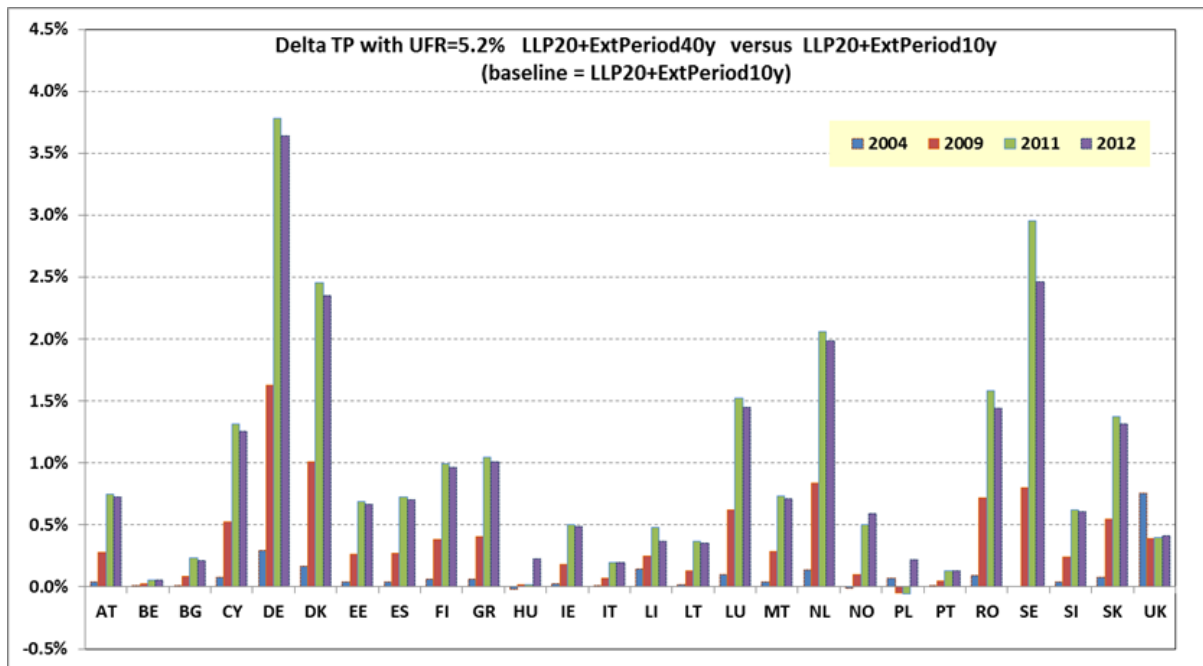


FIGURE 30: RELATIVE CHANGE IN TECHNICAL PROVISIONS WHEN ALLYING 40 YEARS CONVERGENCE VERSUS 10 YEARS CONVERGENCE (BASELINE) FOR DIFFERENT REFERENCE DATES, USING A UFR OF 5.2%

The above shows that the impact of the different convergence periods varies over time depending on where the UFR at the respective reference date is compared to the LLP, e.g. at YE04 the 20+40 extrapolation approach with a 4.2% UFR would have quite consistently resulted in a lower TP compared to 20+10 while at YE11 the opposite is the case for most Member States.

#### 4.7.2. Undertakings by size

The method chosen for the extrapolation applies to all insurance undertakings. The parameterisation will depend on the financial market conditions for the individual currencies. There is no variation as to the size of companies. The impact of the parameterisation will largely depend on the duration of the insurance obligations.

#### 4.7.3. Undertakings by type

As the duration of the insurance obligations of non-life companies is usually short, the impact of the parameterisation of the extrapolation is mainly material for life companies.

#### 4.7.4. Group aspects

The parameterisation of the extrapolation is currency-specific. There are no particular group issues expected.

#### 4.7.5. National market insights

The parameterisation of the extrapolation is currency-specific, aiming to reflect the financial market conditions for the individual currencies. Furthermore, the effect of the extrapolation could be influenced by other measures, such as a possible application of a national CCP, which is analysed in the relevant section of this report.



#### 4.7.6. Cross-border business

The parameterisation of the extrapolation is currency-specific and not country-specific. Obligations denominated in a particular currency will need to be discounted using the interest rate term structure for that currency. Furthermore, the effect of the extrapolation could be influenced by other measures, such as a possible application of a national CCP. Apart from this effect, which is analysed in the relevant section of this report, there is no particular cross-border issue expected from the choice of the parameterisation of the extrapolation.

#### 4.7.7. SII balance sheet volatility

Please see the earlier remarks on the volatility of technical provision and own funds, e.g. in Section 4.5.

#### 4.8. Impact on competition

Because the extrapolation approach applies to all undertakings in the same way (depending on the currency) it does not seem to result in any direct competitions distortions. Furthermore, the effect of the extrapolation could be influenced by other measures, such as a possible application of a national CCP, this is analysed in the relevant section of this report.

#### 4.9. Impact on Long Term Investments

Some NSAs mentioned that a more stable interest rate term structure for regulatory purposes may decrease the demand for long dated bonds since there is less of a need to hedge volatility at the long end of the curve. Furthermore, where a (re)insurer employs a strategy in which long-term obligations are backed with long-term assets a faster convergence speed may result in higher own funds volatility. This comment was also echoed by some industry participants.

Other NSAs pointed out that since a short convergence period leads to a more predictable valuation of technical provisions, a faster speed of convergence might enable a more long-term perspective of the investment horizon and asset management.

#### 4.10. Other considerations

It was noted by participants that the regulatory system may generate a financial position which differs from that based on an 'economic' view and consequently questions may be raised about the credibility of the regulatory system as a whole.

Some more comments were received relating to the risk-free rate approach in general, e.g. the size of the credit risk adjustment and the interest rate stresses on the illiquid part of the term structure. However, these are not subject to this report.

#### 4.11. Main technical findings on the Extrapolation

The analysis in this section shows that it is difficult to judge on one parameter of the extrapolation approach in isolation as LLP, UFR and convergence period are closely



interlinked in terms of their impact on the level and volatility of the solvency position of insurers.

Main arguments supporting a shorter convergence period for the Euro (e.g. 10 years):

- This option leads to a more stable interest rate term structure which in turn leads to more stability of the technical provisions;
- In the current market conditions, a shorter convergence period would have more impact on life insurance markets with longer durations of the insurance obligations.

Main arguments supporting a longer convergence period for the Euro (e.g. 40 years):

- A slower convergence would mean giving somewhat greater weight to market information; and not making optimal use of market information leads to a determination of the financial position which is insufficiently market consistent
- It leads to less complications relating to the alignment between Pillar 1 and Pillar 2:
  - Better incentives for good risk management, asset-liability management and hedging;
  - The assumptions used in the ORSA better aligned with the Pillar 1 regulatory assumption;
  - Investment in longer date assets is not discouraged;
  - Reduced problems with the market consistent calibration of Economic Scenarios Generators;
  - Less issues around the design and use test of internal models.
- A longer convergence reduces potential competition issues if one company bases pricing on the regulatory model whilst another company makes use of market information beyond the LLP.

A consideration that may be understood in both directions is the following: when the last forward rate derived in the liquid part of the curve is lower than the ultimate forward rate (4.2%) a rapid convergence may lead to a representation of the financial position which is overly optimistic and may delay supervisory intervention. This effect is symmetric, i.e. the opposite applies when the last forward rate derived in the liquid part of the curve is higher than the ultimate forward rate.

### *EIOPA's main observations and technical advice on Extrapolation*

#### **EIOPA's main observations on Extrapolation:**

EIOPA was asked to test the impact of different convergence speeds being a key input parameter to the Extrapolation approach. Analysis shows that for the Eurozone, a shorter convergence period generally results in more stability of technical provisions. However, compared to applying a longer convergence period and especially in times of high market volatility, this increases the volatility of own funds and thus of solvency ratios.

Another important aspect related to a shorter convergence period is the potential risk of not linking of the extrapolated part from financial market reality. This leads to a number of concerns with respect to the risk management of the undertakings (e.g. misevaluation



of options and guarantees or potential risk of investing in shorter term assets to avoid volatility generated by differences between marked-to-market and marked-to-model data) and the consistency between regulatory processes (e.g. with respect to ORSA and internal models). The same could occur with a longer convergence, but generally to a much lesser extent.

**EIOPA's technical advice on Extrapolation:**

For the Euro, EIOPA favours a less rapid convergence speed and **advises to select a significantly longer convergence period than 10 years, for example of 40 years.** A less rapid convergence means a larger weight for observed market data. This better alignment with market data is of importance for optimal risk management by the insurance undertakings, including hedging strategies, the ORSA and, where applicable, the use of internal models. EIOPA also wishes to point out that a convergence over a longer period implies that less weight is given to the choice of the ultimate forward rate (UFR).

In order to sufficiently account for any remaining risks stemming from a deviation between the extrapolated risk-free curve and economic reality, EIOPA suggests implementing **related sensitivity analysis in Pillar 2**. This does not give rise to new Pillar 2 requirements, but can be incorporated as part of the sensitivity analyses required in the existing Pillar 2 framework.

For other currencies, the characteristics of the local bond and swap markets must be taken into account when determining the appropriate convergence period including special considerations for currencies pegged to the Euro.



## 5. “Classical” Matching Adjustment

### 5.1. Purpose of the measures and highlights of the tested approach

#### *Summary*

Historical data suggests that market values of bonds are more volatile than implied by their default risk alone. Where (re)insurers may need to sell bonds to meet their unpredictable liabilities, they are exposed to these short-term bond value fluctuations. This is, however, not the case where they hold bonds to maturity.

(Re)insurers holding bonds for predictable portfolios can be more certain that they will be able to hold their bonds to maturity, and are therefore less exposed to short-term fluctuations in bond values. They are still exposed to default and to the cost associated with maintaining the credit quality of the portfolio should downgrades occur.

The “classical” matching adjustment (MA) is an adjustment to the discount rate used to value such predictable liabilities, whereby the market value of the liability mirrors the market changes evident in the asset values which are not related to default or downgrade costs. It is equal to the spread over the risk-free rate on admissible backing assets, less an estimate of the costs of default and downgrade (the fundamental spread). The matching adjustment can turn negative in situations when spreads are generally low. In such cases technical provisions would be increased by the application of the classic MA.

#### *Key characteristics of the MA*

The allowance of a MA is restricted to asset and liability portfolios for which it can be demonstrated by the undertakings that several conditions are met.

The MA is a mechanism whose application is permanent as long as the eligibility conditions are met.

It is a symmetrical device since when market conditions are advantageous the actuarial rate that adjusts the value of liabilities to the value of assets may be inferior to the fundamental spread.


Being permanent, symmetric and subject to strict eligibility criteria device, the MA does not give rise to the calculation of a specific SCR component. On the contrary, portfolios eligible to the MA benefit from a reduced SCR spread.

The MA is a purely undertaking-specific device since it depends on the allocation of assets and the specific contract features.

The MA as tested was not applicable to non-life business and reinsurance business.

#### *Governance requirements*

The MA's theoretical background is based on the ability to perfectly match each of the future cash flows of the liability portfolio with the future cash flows of the assigned portfolio of assets. In this case, bonds are held to maturity, avoiding material risk of loss



due to the sale of assets in the event of a sharp increase in spreads. The matching criterion is thus at the heart of the MA mechanism.

To ensure the quality of the matching over the lifetime of insurance obligations, the cash flows of assets and liabilities should be perfectly predictable. Thus, additional conditions are required:

- Criteria ensuring the predictability of insurance obligations: the only underwriting risks connected to the portfolio of life insurance obligations shall be longevity, expense and revision risks and the life insurance contracts underlying the portfolio of insurance obligations shall not give rise to future premiums payments.
- Criteria ensuring the predictability of assets: the asset cash flows shall be fixed and shall not be subject to third-party options.

Moreover, to avoid optimisation behaviour meant to strategically increase the level of MA, other eligibility criteria apply:

- The ring-fencing: it ensures that the assets of the assigned portfolio which are held to back the predictable portfolio of liabilities are not in fact exposed to the risk of forced sale as a result of being required to support other less predictable liabilities;
- Restriction for good risk management: the MA may incentivise investments in more risky assets as such investments tend to earn a greater MA due to the higher spreads. To prevent this wrong incentive, assets whose credit quality is below credit quality step 3 are not eligible, the share of credit quality step 3 corporate bonds in the whole asset portfolio cannot be greater than 33% and the level of MA that insurers can obtain from credit quality step 3 assets cannot exceed the higher of the MA for assets of credit quality step 1 and 2;
- No "cherry-picking": insurance undertakings that apply the MA to a portfolio of life insurance obligations shall not revert back to the approach that does not include a MA.

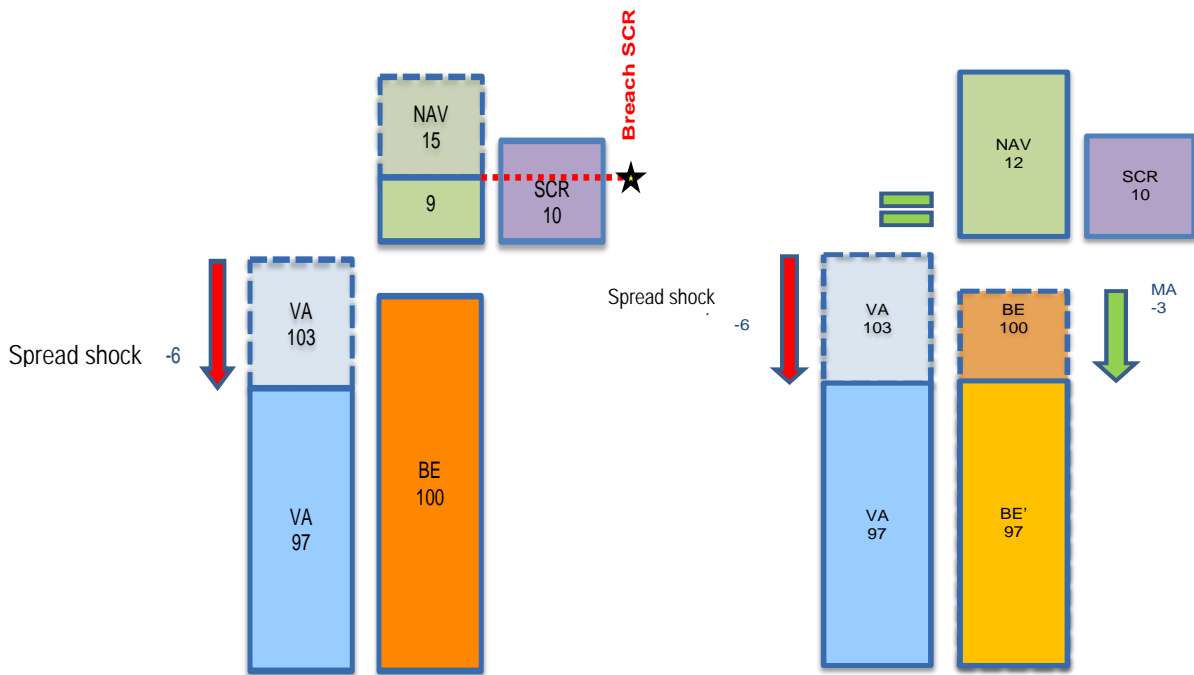
Furthermore, the activity of insurance undertakings in relation to which the MA is applied can be pursued only in the Member State where the undertaking has been authorised.

Additional requirements are set out to enhance the effectiveness of the supervision of the measure and mitigate any prejudice in terms of policyholder protection:

- Supervisory approval: application of the MA is subject to supervisory approval;
- Disclosure requirements: insurance undertakings which apply the MA shall submit to their supervisors a description of the impact of a reduction of the MA to zero;
- Withdrawal of the measure: where an insurance undertaking that applies the MA is no longer able to comply with the eligibility criteria, it shall immediately inform its supervisor and take the necessary measures to restore compliance with these conditions within two months. Beyond this period, it shall cease applying the MA and shall only be able to apply the MA again after a period of 24 months.

### ***Calculation and impact of the matching adjustment***

The MA is meant to reduce the technical provisions by the use of a premium corresponding to the "residual" part of the spread over the risk-free rate. The simplified diagram below illustrates the effect of the MA.



**FIGURE 31: EFFECT ON THE SOLVENCY POSITION WITHOUT AND WITH THE MATCHING ADJUSTMENT**

The MA is calculated as the difference of the three following items:

(1) the annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of life insurance obligations, results in a value that is equal to the market value of the portfolio of assigned assets;

(2) the annual effective rate, calculated as the single discount rate that, where applied to the cash flows of the portfolio of life insurance obligations, results in a value that is equal to the value of the best estimate of the portfolio of life insurance obligations where the time value is taken into account using the basic risk-free interest rate term structure; and

(3) the fundamental spread.

The level of the MA amounts thus to the following:

$$MA = (1) - (2) - (3)$$

Where:

- The difference between (1) – (2) equals to the part of the spread over the risk-free rate that explains the difference in value between the asset portfolio and the liability portfolio;
- The difference between ((1) – (2)) – (3) aims at capturing the part of the spread over the risk-free rate that is not linked to the probability of default and the cost associated with maintaining the credit quality of the portfolio should downgrade occur.



### *The two forms of the “classical” MA tested*

Two forms of the “classical” MA have been tested for the impact assessment. The alternative version of the MA differs from the standard version of the MA by the fact that the two following conditions do not apply:

- the share of credit quality step 3 corporate bonds in the whole asset portfolio cannot be greater than 33%;
- the level of MA that insurers can obtain from credit quality step 3 assets cannot exceed the higher of the MA for assets of credit quality step 1 and 2.

The alternative “classical” MA has been tested in scenario 4 only. The standard “classical” MA applied in all other scenarios.

## 5.2. Impact on policyholder protection

The “classical” MA as tested in base scenario 1 (i.e. retaining asset quality limits for credit quality step 3 investments) seems to impact policyholder protection less directly since it credits illiquidity in assets only where they are held to back truly illiquid liabilities, for which benefit payments cannot be accelerated. The effects of non-default asset price movements are incorporated in the market value of the matched liability.

Some supervisory authorities raised the general concern that lower technical provisions are plainly detrimental to policyholder protection, or may present an overly optimistic picture of the technical provisions. The main risk in this respect is that the split between the portion of the spread allocated to liquidity and that to default structurally changes in the market, and that the assumptions of the fundamental spread therefore do not reflect reality. This is mitigated to some extent by the prudent floor of 75% of the long-term average and the inclusion of a cost of downgrades element and by keeping up strict asset quality limits. The default assumptions in the fundamental spread should also be reviewed frequently and updated where credit markets seem to have undergone structural change.

## 5.3. Impact on effective and efficient supervision

### *More complex supervisory processes*

In general, the MA will make supervision more complex, due to:

- The great difficulty to benchmark insurance undertakings due to the undertaking-specific nature of the device;
- The on-going verification of the compliance with eligibility criteria.

The new layer of complexity introduced by the “classical” matching adjustment is likely to be overcome with experience. For those countries that are more experienced with applying MA-like devices the degree of complexity for the supervision of this mechanism would be far lower.

The undertaking-specific nature of the device results in continuous verification of the compliance with eligibility criteria, which is fairly challenging. On the liability side, supervisors have to check contracts by contracts whether all the conditions are met. And on the asset side, the verification of eligibility criteria has to be done asset by asset.



All those eligibility criteria should be met on an on-going basis and it would be the role of supervisors to verify that undertakings actually do it. Most of the controls cannot be automatically achieved and an extensive regular reporting would be necessary.

#### *Temporary non-compliance with eligibility criteria*

New supervisory processes should also be put in place notably for the cases where undertakings are no longer able to comply with the eligibility criteria. It is already foreseen that where undertakings are not able to restore compliance with these criteria within two months, those undertakings shall cease to apply to matching adjustment for a period of at least 24 months. Such a regulatory event can have a huge impact on the solvency position of the undertakings and may lead to a breach of SCR and MCR. The consequence of removing the benefit of the MA can be so significant that protracted disagreements between the undertaking concerned and its supervisor are expected before the possible recognition of the non-compliance with the conditions to apply the MA.

## 5.4. Implementation effort

### *For undertakings*

According to the feedback provided by undertakings, the MA would be the most costly LTG measure to implement, in particular if ring-fencing requirements are put in place. However, undertakings also believe that this cost would not be material in relation to the overall cost of Solvency II implementation. Also, implementation efforts would be lower for those undertakings that have matching systems that are already in the line with the “classical” matching adjustment requirements. For others, the costs of restructuring the current portfolios would be significant while the implementation of the MA for new business would be easier to achieve.

Undertakings provided a great variety of reasons why the MA will consume significant resources on an on-going basis. The most quoted reasons relate to:

- Resources that would need to be devoted to assessing if the requirements of the MA continue to be met and taking appropriate actions to ensure that those requirements are met;
- Assets and liabilities management to sustain the matching mainly triggered by the impact of new business, longevity, downgrades or defaults;
- Calculation of all the parameters required for the calculation of the MA in each relevant portfolio;
- SCR calculations within each ring fenced fund;
- Supervisory reporting requirements, in particular cash flow reporting, and public disclosure requirements.

Regarding the LTGA effort, undertakings stated that understanding the concept and performing all the steps of the MA process, from identifying eligible assets and liabilities to the calculation of the MA were amongst the most resource consuming tasks.

### *For NSAs*

NSAs in Member States where the measure would be applicable consider that MA will be the most time and resource consuming LTG measure; primarily because it is a company-



specific measure. Its application would require supervisory approval and regular monitoring and review as described in section 5.3.

However, it should be mentioned that the implementation effort would be less burdensome for those countries that already have a similar device.

Some participants advocated for removing the requirement for supervisory approval, as they consider that ex-post supervision would be more effective and would reduce the resources needed. Others advocate for setting up quite clear and well-defined internal procedures for the MA approval process.

In order to facilitate implementation, supervisors not yet being familiar with the MA (or a similar measure) consider that sufficient implementation time has to be granted.

#### ***For EIOPA***

The implementation of the MA will not be overly resource consuming for EIOPA once the measure is applied.

In the preparation to the implementation, EIOPA expects some effort for the coordination of a consistent implementation across Member States. Furthermore, it will be EIOPA's role to regularly provide fundamental spread calibrations to supervisors and undertakings potentially also accompanied by maximum levels of MA applicable (linked to the A/AA cap). This is expected to be non-trivial in the initial implementation, but should be a smooth process once it is fully established.

## **5.5. Incentives for good risk management**

It should be noted that, given the restrictive framework of the MA, the scope of the impacts outlined in the paragraphs below has to be equally limited to the specific type of insurance obligations eligible for it and the assets backing those liabilities. Furthermore, the MA is a voluntary measure; therefore the undertakings need to internally assess the convenience of applying for it.

### ***Impact on asset allocation and diversification***

#### ***Inadmissible asset types***

Where a MA is applied, the underlying investment focus is likely to shift to assets with fixed returns. Investments in callable bonds, floating rate notes, residential mortgages, equity release mortgages, property, equity and other variable yield participations may well be reduced.

A number of undertakings noted in their responses that a large number of assets that are currently used and that form an integral part of effective risk management processes would be excluded. They stress that in their view it is not the fixity of the asset cash flows that is important but rather the degree to which the asset cash flows replicate the cash flows of the liabilities.

#### ***Credit quality limits***

The restrictions on the credit quality of assets that can be held will likely lead to a reduction in holdings of assets that fall outside of the admissible range. During adverse



market conditions when downgrades are likely to occur, this could lead to pro-cyclical price movements if assets with a poor outlook are sold to avoid inadmissibility.

#### *Risk appetite*

The MA may effectively lead to an increase in the risk appetite of undertakings seeking to maximise the overall balance sheet benefit by investing in bonds with higher spreads. This is largely mitigated by restricting asset quality to investment grade and by capping the MA that can be obtained in respect of assets of credit quality step 3 to that higher of that applicable to credit quality steps 1 and 2. These restrictions appear effective in the market conditions tested since credit spreads were seen to be stable for credit quality steps 2 and better, to which the MA is restricted. These restrictions should therefore be maintained, and EIOPA should publish its view on the maximum level of MA between credit quality step 1 and 2, which would set the absolute maximum MA that may be applied in respect of assets of step 3. This could further mitigate any potential wrong incentives, e.g. related to non-rated investment instruments which would need to be self-rated by undertakings.

#### *Duration matching and asset maturities*

All of the matching adjustment devices encourage matching of asset and liability cash flows by duration. This is good risk-management practice in that it mitigates exposure to changes in the valuation rate of interest and reduces risks associated with reinvesting assets at unknown future rates of investment return. In markets where matching by duration is currently uncommon, a number of undertakings noted that the introduction of MAs would consequently lead them to invest more heavily in assets of longer maturities.

### ***Impact on the market for long-term investment***

#### *Long-term assets*

Industry participants pointed out that if the illiquidity characteristics of liabilities would not be well recognised, long-term investment can come under pressure and create a gap in the long-term financing market that cannot be filled by other market participants. Short-term investments would effectively be encouraged due to the excessive short term volatility that insurers' balance sheets would be exposed to. The consequent shift to shorter maturities would likely put significant pressure on asset prices stemming from imbalances between supply and demand.


It should, however, be noted that other parts of the Solvency II framework not related to the MA create incentives for investing in fixed income long-term assets, e.g. the "kinked" approach in the SCR spread risk sub-module and the SCR interest rate sub-module that penalises an asset-liability mismatch.

#### *Inadmissible assets*

Some participating undertakings noted that in the case of certain mortgage loans and related securities (which are inadmissible under the MA), a retreat of insurers in these markets may not be offset by any other market participants.

#### *Long-term guarantees in product offerings*

It was also stated by participating undertakings that they would be far less inclined to offer products with long-term guarantees without a MA type measure, since the associated market volatility would need to be borne by them. Alternatively, the



premiums in respect of such guarantees would need to be increased significantly, eroding policyholder value. More generally, policyholders would also effectively lose out on a deserved element of investment return for posting illiquid deposits.

Further comments received related to the aspect that the asset admissibility criteria restrict the number of asset classes in which insurers or portfolios applying the MA can invest, which could lead to higher market concentration risk within the insurance industry generally. Insurers have traditionally been significant investors in infrastructure and real estate as these assets have long term regular cash flows which provide a good match for the cash flows of annuities. Some undertakings consider it critical for them that these types of assets remain within the scope of application of the matching adjustment. Insurers are significant funders of, for instance, equity release mortgages and residential mortgages. Rendering such loans inadmissible for the matching adjustment might have a possible dual impact on these markets.

#### *Competitive considerations*

Some participants warned that, without LTG measures, the actions insurers would take to reduce volatility in their balance sheet and the extra capital held to back “artificial volatility” would make insurance products uncompetitive with negligible net rewards for customers. Long-term products would become more expensive for consumers and the volume of business would steadily decline. As a consequence the need for insurers to invest in long-term assets in the same way that they have traditionally done would decline. Insurers in some markets currently have significant holdings in corporate debt and this could have consequences for the prices of those assets at a time when other categories of institutional investors are shortening their investment time horizon, further eroding policyholder value. Many undertakings have indicated that they may cease to offer long-term products altogether if the value to both policyholders and shareholders were too thin to make them viable. If this occurred in a number of markets there could be a secondary impact on the broader European economy, given the reduction in long-term financing.

#### *Ring-fencing*

The ring-fencing or separate management of the matched business is conceptually necessary to ensure that the assets of the assigned portfolio which are held to back the predictable portfolio of liabilities are not in fact exposed to the risk of forced sale as a result of being required to support other, less predictable liabilities. The relevant assets and liabilities should therefore be managed separately, and diversification restricted under the default assumption for ring-fencing according to the standard formula.

Participants in the exercise however stressed the need for guidance on how ring-fencing ought to be applied. In particular, undertakings see it as critical that they are able to manage the credit quality of the matched portfolio. This would clearly be required where assets are downgraded to below investment grade and are therefore no longer admissible to the matching portfolio; but it would also be desirable that undertakings are more generally able to maintain the credit quality of the portfolio if needed, without artificial impediments. The phrase in Omnibus II indicating that the matched portfolio “shall be ring-fenced or managed and organised separately *without possibility of transfer*” may be misleading in this sense.



## ***Risks not properly reflected by the measure***

### *Mortality risk*

Provided that the inclusion of mortality guarantees in the products eligible for the MA, does not put at risk the well-functioning of the MA (i.e. risks for the matching caused by deviations in mortality assumption is immaterial), prohibiting that the MA may guarantee mortality risks at all, means a lower level of protection for policyholders' interest and will discourage long-term savings -(it is fully understandable that policyholders wish to have some guarantee of return of their savings in case of death. This effect might not be seen as positive when aiming at promoting long-term saving and long-term retirement plans to be offered within the EU.

Furthermore, mortality risk does not include the behavioural elements in policyholder's hands that may increase the risk of adverse deviations for the undertakings in crisis times (unlike lapse risk for instance).

As mentioned above, mortality risk does not endanger the well-functioning of the CMA when it is immaterial, that is, unfavourable deviations in mortality risk do not force the undertaking to sell the assets covering CMA business. *Ad hoc* calculations to manage and control this immateriality in a prudent and sound manner will be necessary (see proposal in section 5.11) as well as appropriate Pillar 2 requirements regarding liquidity risks and the relevant features of the portfolios of insurance obligations.

### *Estimation risk and reliance on rating agencies*

The default risk allowance is set according to the views of rating agencies. But experience shows that credit risk is not always well reflected in ratings, as confirmed by current European efforts to reduce regulatory reliance on rating institutions.

### *Appropriateness and reliability of fundamental spreads*

EIOPA has provided a range of fundamental spreads and maximum MA level as part of the LTGA Technical Specification based on the testing methodology set out by the ToR. EIOPA believes that the fundamental spread calibration tested with respect to sovereign bonds was low in some cases due to recent downgrade events and the reliance on the long-term average only for sovereigns, which may fail to capture the current market risks. No quantitative analysis on the impact of such potential misestimations on undertakings' solvency positions has been performed as part of the LTGA tough.

## **5.6. Impact on financial stability and prevention of systemic risks**

### *Illiquid liabilities*

The MA only gives credit to illiquidity in assets where this is held to back truly illiquid liabilities, for which benefit payments cannot be accelerated. The effects of non-default asset price movements are incorporated in the market value of the matching liability thereby reflecting the market price of non-default illiquidity in the liabilities also. The overall exposure to these market effects – which are equally present in both assets and liabilities – is therefore removed from the balance sheet by proxy and assumption, and short-term fluctuations and pro-cyclical effects are significantly reduced.



### *Asset restrictions*

The strict asset eligibility criteria as they stand will restrict the number of asset classes in which insurers can invest, potentially leading to higher risk concentration risk. The Credit Quality Step 3-eligibility requirements of the MA could lead to pro-cyclical price effects for BBB-rated assets, if assets with a poor outlook are sold to avoid inadmissibility. The asset restrictions are nevertheless necessary to prevent poor risk management incentives that may stem from their exclusion.

### *Binary eligibility*

The binary nature of eligibility, i.e. either the portfolio is eligible or it is not, could lead to cliff effects if a portfolio unexpectedly became ineligible. The most likely cause of this would be a large-scale credit event, like the downgrade of an EEA sovereign. These restrictions should not be removed, but sensible ways to mitigate adverse effects should be explored.

### *Duration matching*

The MA further encourages alignment of asset and liability cash flows which is a very effective measure in mitigating spread and interest rate risk and further stabilises the solvency position and by extension, the financial stability of the insurance market.

### *Symmetry*

More generally, it is desirable that the LTG measures allow tightening conditions in good times as well as loosening requirements in bad times since short-term volatility on the upside as well as on the downside should be addressed. The fact that the MA turns negative in periods of market exuberance goes some way in achieving this.

## 5.7. Impact on (re)insurance undertakings' solvency position<sup>10</sup>

### 5.7.1. All undertakings

The chart below presents the relative amount of technical provisions affected by the measure based on quantitative input by participating undertakings.

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<sup>10</sup> It should be noted that all analysis shown in this section is based on the “Base scenarios” of the LTGA, i.e. undertakings have applied the following LTG measures alongside the “classical” MA: the Extended MA Standard I version, an extrapolation with 10 years convergence speed and a 100 bps CCP.

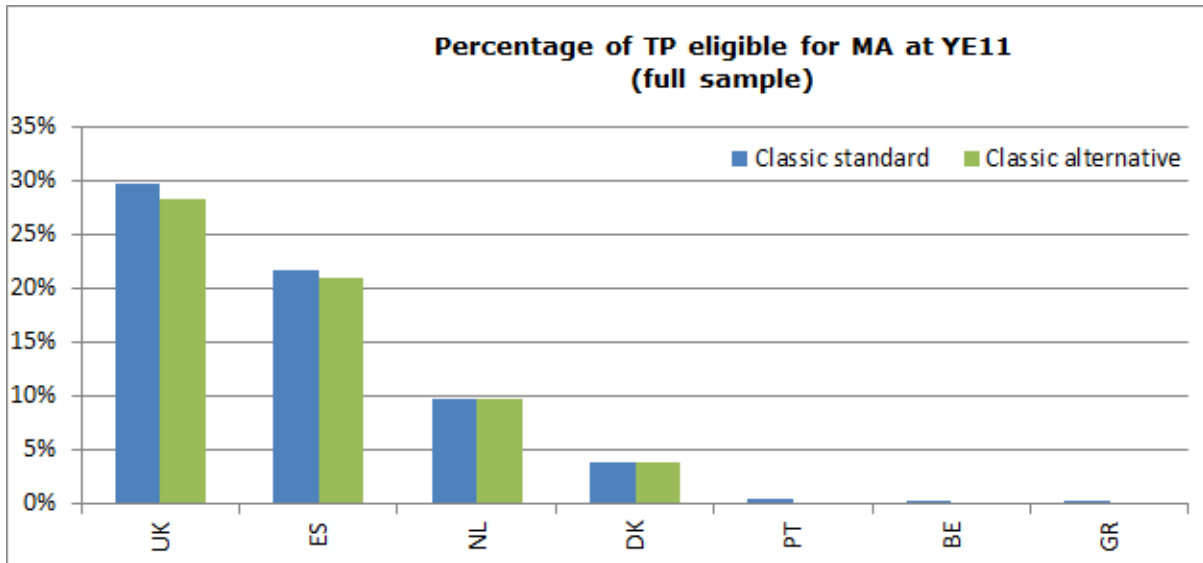


FIGURE 32: PERCENTAGE OF TECHNICAL PROVISIONS ELIGIBLE FOR MA AT YE11

The chart below shows the impact of MA (standard and alternative) on SCR surplus for the sample. As expected, there does not seem to be any impact on non-life undertakings while the global SCR surplus of the sample used to build the below chart would grow by 6%.

It should be noted that the LTGA sample in the countries having submitted “classical” MA data represents a market share of 21% of the life markets (weighted average).

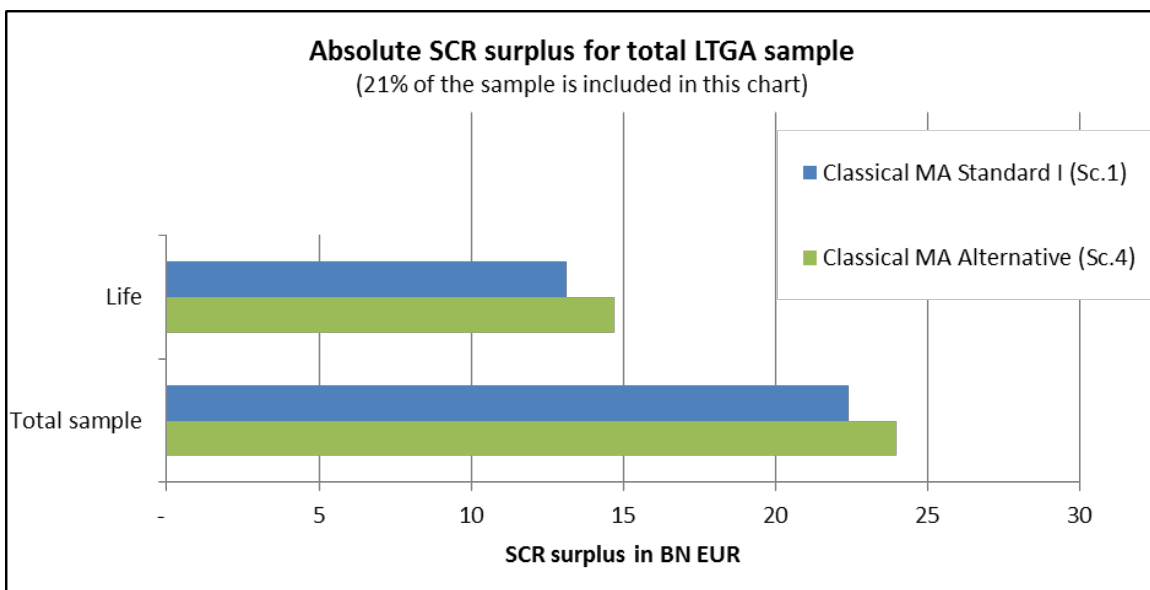


FIGURE 33: ABSOLUTE SCR SURPLUS FOR TOTAL LTGA SAMPLE (BN EUR)

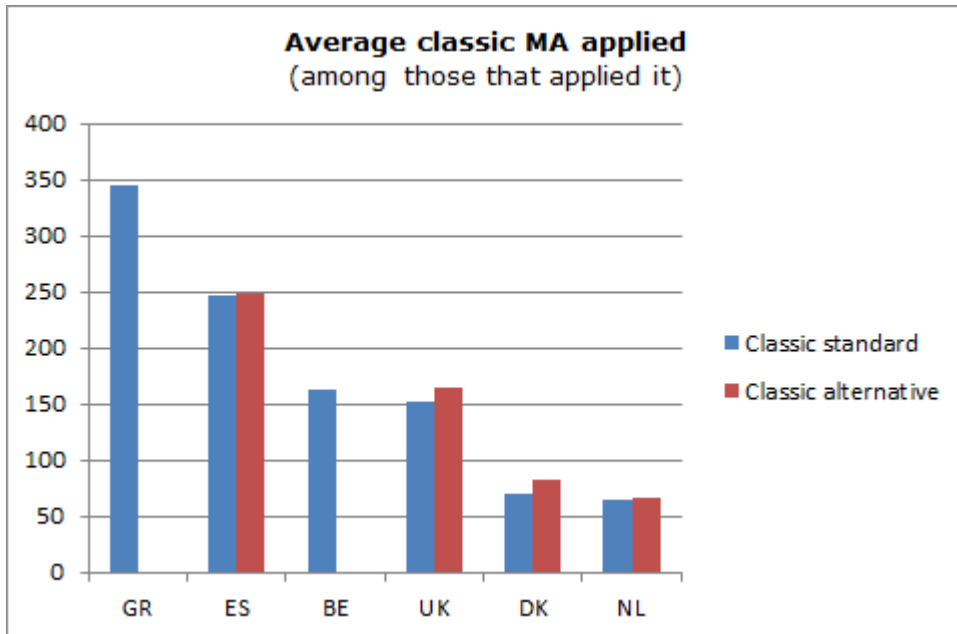


FIGURE 34: AVERAGE LEVEL OF MA APPLIED (IN BPS)

It should be noted that results on the “alternative” MA conditions as tested in sensitivity c) to scenario 1 have not been of sufficient quality to provide an impact analysis.

### 5.7.2. Undertakings by size

The “classical” MA is far simpler to apply than the Extended MA, but it may nevertheless prove a greater challenge to apply for smaller insurers who are unfamiliar with this concept or similar ones. This effect is mitigated in some of the markets by the fact that undertakings already apply a liquidity premium to matched, predictable liabilities according to the current national solvency rules.

### 5.7.3. Undertakings by type

The “classical” MA as tested was applicable to life annuity business only.

However, EIOPA sees no reason why the MA measures adopted should disqualify business based on the form of the business classification rather than based on the substance of the liabilities. Non-life annuities and reinsured annuities should be eligible if they meet the other eligibility requirements, since their cash flows may resemble those of primary life insurance annuities in all but name. In keeping with the principle of substance over form, the references to life insurance should therefore be removed from the liability eligibility criteria.

### 5.7.4. Group aspects

The impact of the restrictions to diversification stemming from the ring-fencing requirements will likely be greater for groups for which risk diversification is central to their business strategy. However, as indicated above, the ability of undertakings to hold illiquid assets to maturity where they back illiquid liabilities hinges on the fact that these assets will not be used to meet other *liquid* liabilities of the undertaking. For this reason, portfolios to which the classic MA is applied should be ring-fenced to ensure that the assets can indeed be held to maturity. Other than concerns about the implications of



ring-fencing on diversification, the majority of participants indicated that there are no particular issues with applying these measures at a group level.

#### 5.7.5. National market insights

The graphs in sub-section 5.7 above show that the applicability of the MA varied significantly between Member States. The qualitative responses of participants indicate that this is largely related to differences in the liquidity of the liabilities associated with the products they offer – in particular stemming from surrender values. The degree of cash flow matching and the extent of admissible asset holdings across markets are also influencing factors.

A point of particular significance for the Spanish market is that the exclusion of immaterial exposures to mortality risk had a significant impact on the results of the MA. It should be noted, that the exclusion of this risk (where it is immaterial) is seen as a major drawback to the attractiveness of related annuity policies for consumers.

#### 5.7.6. Cross-border business

The tested approach explicitly excluded cross-border business. There seems to be no technical rationale for this exclusion.

#### 5.7.7. SII balance sheet volatility

Most supervisory authorities are of the view that volatility would indeed be reduced by the application of the MA since the measure specifically targets these short-term fluctuations. However, while it seems to increase own funds "in proportion" to the effect of short-term fluctuations, due to technical restrictions and limitations it does not completely eliminate the effect of short-term fluctuations.

### 5.8. Impact on competition

#### *Smaller versus larger undertakings*

The MA is a relatively complex measure, shown for example in the calculation, information requirements, ring-fencing and asset allocation requirements, implementation cost etc. This increases the difficulty for small undertakings to deal with the complexity due to their limited resources. For instance, the modelling of liability cash flows under different scenarios require sophisticated software (especially on the life side), which is not in place in many smaller life insurance undertakings. Small undertakings would need to adapt processes and products due to their potential lack of expertise. Undertakings must implement new organisational structures, which might not be feasible for small portfolios. Also the administrative costs and yearly controls to assess whether conditions are still fulfilled can be very costly, especially for smaller entities. In addition to that, the access to financial markets and a sophisticated asset-liability management may be contributing factors for a comparative advantage for large undertakings.

On the other hand, large undertakings may have a more complex and time consuming task due to their bigger portfolios.



### *Comparability of balance sheets within a Member State*

The MA could lead to difficulties in comparability of technical provisions, own funds and capital requirements and hence influence harmonisation and convergence in supervisory practices.

However, the need to disclose the impact of the MA seems to mitigate these concerns.

### *Cross Member State aspects*

The fact that the MA may not be applied to cross-border activity puts undertakings with a considerable share of cross-border activity in a country in a less favourable condition compared to the undertakings authorised in another country applying adjustment MA. Additionally, it makes it more difficult to offer products from one country to another country.

Some participants mentioned that the MA may be more suitable for particular markets of the EU, and whenever there are measures that decrease technical provisions which only apply in some countries this gives rise to disadvantages for the undertakings which cannot apply these measures. In particular, the application of the MA favours markets where a similar adjustment already exists. In other markets, asset and liability management profiles, tailored in a different regulatory context, could not be rearranged without significant costs.

Other NSAs commented on the impact on competition in case MA is not applicable. The absence of MA might result in a clear disadvantage for markets where policyholders are interested in products with guaranteed interest rates. Short-term and risky products are difficult to commercialise in these markets, in particular in this financial crisis environment. Without the application of a MA, companies may stop selling products with long-term guarantees, as a direct consequence would be a disadvantage compared to the other Member States.

## **5.9. Impact on Long Term Investments**

Please see section 5.5.

## **5.10. Other considerations**

### *Product availability*

The implementation of the "classical" MA does seem to incentivise the offering of fully matched and predictable long-term products.

### *Variability of default and Risk Margin*

The volatility of the probability of default needs further consideration to ensure that any implications for the hedgability of the technical provisions are captured. This could be done through an appropriate adjustment to the Risk Margin or through ensuring the associated volatility is adequately reflected in the fundamental spread.

It should be noted, that EIOPA believes there is potential for some additional technical consideration on the way the MA and Risk Margin interact.

## 5.11. Main technical findings on the “classical” MA

### *Asset restrictions*

The restrictions applying to assets of credit quality step 3 under the standard form of the “classical” MA should be upheld. The restriction on the level of MA to that applicable to assets of credit quality step 1 and 2 avoids undertakings being incentivised to invest too heavily in lower quality assets, for which higher spreads are observable. EIOPA should publish its view of this maximum rate, which then forms the maximum nominal rate that undertakings may apply in respect of assets of credit quality step 3. The restriction on the proportion of the matching portfolio in which assets may be invested was set at 33% for credit quality step 3. While the benefits to risk management of this restriction are in part already captured by the restriction on the level of MA for step 3, it nevertheless seems sensible to retain the restriction to avoid significant exposure to downgrades of such assets, which could lead to non-applicability of the measure.

### *Immaterial mortality risk should be permissible*

Mortality risk does not endanger the well-functioning of the MA when it is immaterial, i.e. unfavourable deviations in mortality risk do not force the undertaking to sell the assets covering MA business. *Ad hoc* calculations to manage and control this immateriality in a prudent and sound manner will be necessary as well as appropriate Pillar 2 requirements regarding liquidity risks and the relevant features of the portfolios of insurance obligations.

An appropriate method to test the immateriality of the mortality risk could be the following one:

$$\frac{\text{Deviation of the mortality risk}}{\text{BE}}$$


Where

- Deviation of the mortality risk is calculated by comparing the BE cash flows and BE cash flows after mortality shock. Only unfavorable deviations (cash flow post shock > cash flow pre shock) should be taken into account. The current value of those unfavorable deviations would be calculated using the basis risk-free interest rate curve
- Best estimate (BE) is the best estimate liability in respect of the portfolio of matched obligations calculated using the basic risk interest rate curve.

With regards to the immateriality of the risk, EIOPA currently considers that the ratio should have a value which does not exceed 5%. However, further investigation on the exact calibration of the limit is needed. In addition, criteria on the minimum size of portfolios could potentially be added, as the predictability of mortality cash flows increases significantly with portfolio size.

### *Ring-fencing should apply in a workable way for MA portfolios*

The ring-fencing or separate management of the matched business is conceptually necessary to ensure that the assets of the assigned portfolio which are held to back the predictable portfolio of liabilities are not in fact exposed to the risk of forced sale as a



result of being required to support other, less predictable liabilities. The relevant assets and liabilities should therefore be managed separately, and diversification restricted.

EIOPA wishes to stress that the concept and application of ring-fencing in the context of the MA needs further elaboration and clarification. Ring-fencing needs to be workable in practice. The details of exactly how this works for the practical running of annuities business need to be carefully thought through. Issues to be resolved include ensuring that ring-fencing allows for some degree of active investment management of the portfolio in the case of risk of downgrade, in order to maintain the credit quality of the asset portfolio, or e.g. the use of any profits arising. Clarification is also needed on e.g. the inclusion of new layers of business. However, the basic concept of buy- and-hold is vital for appropriate running of the MA business, and must be maintained as well as the restriction to diversification benefits (i.e. notional SCR calculations for MA portfolios).

#### *Assessing the adequacy of cash flow matching*

The LTGA technical specification sets out a matching requirement that permits a 15% mismatch by duration on aggregate. This was for the purposes of this exercise only, but should be revised to a more prudent level while making some allowance for mismatching at very long durations, where the market in appropriate assets may be thin.

#### *Fundamental spreads for sovereigns*

With regards to more appropriate fundamental spread calibrations for sovereigns, a restriction could be introduced by setting a floor for the fundamental spread as a percentage of the current spread. The fundamental spread could for instance be required to be no lower than 30-40% of the spreads observable in the current market, where this is higher than the fundamental spread published by EIOPA. The most appropriate level of the percentage floor should be investigated in further work, though the suggested range seems a suitable starting range given the default and spread data for corporate bonds.

### ***EIOPA's main observations and technical advice on the "classical" MA***

#### **EIOPA's main observations on the "classical" MA:**

The "classical" Matching Adjustment seems to be the most effective tool within the tested LTG package with regards to mitigating short-term volatility from the Solvency II balance sheets of portfolios eligible for the measure. This is due to the portfolio-tailored features of the measure which better reflect the economic reality of the business compared to other measures. However, in order not to risk major policyholder protection concerns and raise wrong risk management incentives, the measure needs to be designed with strict conditions to be met, both on the asset and the liability side.

EIOPA was asked to test two different options to the measure which differed in the strictness of the eligibility criteria for investments. The following two criteria were only applied to one of the tested options: (1) the amount of credit quality step 3 (CQS 3) assets is limited to 33% of the portfolio (excluding government bonds), and (2) the matching adjustment for CQS 3 investments is capped at the maximum of CQS 1 or 2.

The quantitative assessment revealed that an exclusion of the two above criteria would significantly increase the amount of business eligible for the "classical" MA. On the other hand, such an approach does raise major concerns on risk management incentives and



thus policyholder protection. Undertakings would be incentivised to hold instruments with higher spreads and thus higher default risk.

Further important observations on the functioning of the “classical” MA include: (1) the exclusion of immaterial mortality risk from the current measure does not seem to be proportional and reduces the attractiveness of eligible products for consumers; (2) in light of policyholder protection, the ring-fencing approach needs to be possible in practice for MA portfolios, e.g. undertakings need to have the possibility to manage the credit quality of MA portfolios in case of risk of downgrade; (3) the approach to determining fundamental spread levels of certain types of bonds must be prudent enough under current market conditions; (4) no closed list of admissible types of assets should be defined (as was done for the LTGA), but rather suitable conditions in terms of predictability and ability to match liability cash flows; (5) the measure is relatively complex to implement and requires an intensive supervisory review process, but undertakings and supervisors in Member States where the measure is currently applicable consider this effort appropriate and supervisable.

Finally, though the applicability of the measure was limited to a number of Member States, EIOPA expects that eligible MA products will emerge in the near future in other Member States.

#### **EIOPA’s technical advice on the “classical” MA:**

EIOPA advises to implement the “classical” MA as foreseen by the legislators, including the strict criteria relating to CQS 3 investments (i.e. the 33% portfolio limit excluding government bonds and the MA cap). Furthermore, EIOPA suggests the following amendments to the measure: (1) the **inclusion of immaterial mortality risk**, (2) the **ability to manage the credit quality** of the asset portfolio in case of risk of downgrade, (3) a **maximum level to the MA for CQS 3 investment** should be provided by EIOPA, and (4) EIOPA shall provide appropriate criteria and conditions via **guidelines to deal with “cliff effect situations”** derived from the necessary requirements set in terms of quality of assets.

In addition, portfolios should be ring-fenced in an operable way and matched. Regarding the level of mismatching allowed the 15% applied during the LTGA should be revised to a more prudent level.

Finally, the “classical” MA should **not represent a Member State option and not exclude cross-border business**, but should be applicable in all Member States subject to NSA approval.



## 6. “Extended” Matching Adjustment

### 6.1. Purpose of the measures and highlights of the tested approach

#### *Summary*

The Extended MA (EMA) fundamentally differs from the “classical” MA (MA) by the fact that the assets of the assigned portfolio are held to back portfolios of unpredictable insurance obligations. Insurance undertakings that apply the EMA are thus exposed to the risk of forced sale as a result of being matched with liability cash flows subject to discontinuances.

To capture the uncertainty stemming from less predictable insurance obligations, an application ratio is set up. The application ratio intends to restrict the matching adjustment to allow for possible mismatch stemming from discontinuances or earlier than expected payments on eligible business. It is based on a measure of these costs under given stress scenarios.

Three versions of the extended matching adjustment applied for the LTGA:

- EMA standard I (scenarios 1 to 5, 10 and 12)
- EMA standard II (scenario 7)<sup>11</sup>
- Alternative EMA (scenario 6)

#### *Comparison between MA and EMA*

##### *Difference between the standard EMA and the MA*

The two major differences between the MA and the standard EMA are the following:

- Allowance for unpredictable insurance obligations: all life and similar-to-life underwriting risks connected to the portfolio of insurance obligations are eligible to the EMA. Thus, insurance obligations exposed to lapse risk, mortality risk and disability-morbidity risks which are not fully predictable can benefit from the EMA. Furthermore, contracts that still give rise to future premiums are not disqualified from the portfolio for admissibility to the EMA.
- Reduction of the level of MA through an application ratio: the application ratio restricts the level of EMA to the share of asset and liability cash flows which remains matched under stressed situations.

##### *Difference between the alternative EMA and the MA*

In addition to the two differences mentioned above which are also relevant for the alternative EMA, this measure is characterised by the relaxation of most of the governance requirements, especially:

- The matching criterion does not apply: insurance undertakings are not required to evidence any matching between asset cash flows and liability cash flows. A poorly matched portfolio would then be eligible; .

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<sup>11</sup> this version differs from standard I EMA only in the calculation of the application ratio; which in this case applies a 99.9% confidence level rather than the 99.5% underlying the stresses used to determine the application ratio

- Asset cash flows, like liability cash flows, are allowed not to be predictable: the requirement of fixity of asset cash flows does not apply.
- The restrictions for good risk management do not apply: the EMA incentivizes investments in riskier assets as such investments would usually earn a higher MA. No restriction on credit quality of assets applies (i.e. assets whose credit quality is below credit quality step 3 are eligible, the share of credit quality step 3 corporate bonds in the whole asset portfolio can be greater than 33%, the level of MA that insurers can obtain from credit quality step 3 assets can exceed the higher of the MA for assets of credit quality step 1 and 2).
- The fundamental spread is reduced: the fundamental spread only equals the credit spread that corresponds to the probability of default of the assets (i.e. the calculation includes neither a component for downgrading risk nor a floor based on the long-term average of the spread).

|                     | Criteria                                      | CMA      |             | EMA        |            |             |
|---------------------|---|----------|-------------|------------|------------|-------------|
|                     |   | Standard | Alternative | Standard 1 | Standard 2 | Alternative |
| Type of obligations | Policyholder options                          | ✗        | ✗           | ✓          | ✓          | ✓           |
|                     | Future premiums payments                      | ✗        | ✗           | ✓          | ✓          | ✓           |
|                     | Possibility of splitting obligations          | ✗        | ✗           | ✓          | ✓          | ✓           |
|                     | Non-life annuities                            | ✗        | ✗           | ✓          | ✓          | ✓           |
| Matching            | Matching requirements                         | ✗        | ✗           | ✓          | ✓          | ✗           |
|                     | Standard Application Ratio (99.5% VAR)        | ✗        | ✗           | ✓          | ✗          | ✓           |
|                     | Alternative Application Ration (99.9% VAR)    | ✓        | ✓           | ✗          | ✓          | ✗           |
| Type of assets      | Fixed cash-flows                              | ✓        | ✓           | ✓          | ✓          | ✗           |
|                     | 33% maximum exposure in CQS3                  | ✓        | ✗           | ✓          | ✓          | ✗           |
|                     | No restriction on credit quality              | ✗        | ✗           | ✗          | ✗          | ✓           |
|                     | Cap for the level of MA earned by CQS3 assets | ✓        | ✓           | ✓          | ✓          | ✗           |

TABLE 11: SUMMARY OF THE MAIN DIFFERENCES BETWEEN THE DIFFERENT FORMS OF EMA AND CMA

### Calculation of the application ratio


The application ratio shall ensure that insurance undertakings incur no losses due to mismatching and forced sales of assets with a probability of 99.5% over the period till run-off of the obligations.

The application ratio in respect of a portfolio of eligible obligations shall thus capture the portion of obligations which remains matched under stressed situations. For this purpose, the following formula was provided for the impact assessment:

$$\text{Application ratio} = \max \left( 0, 1 - \frac{\text{discounted - cash - flow - shortfall}}{\text{best - estimate}} \right)$$

Where:

*Discounted-cash flow-shortfall* reflects the mismatch caused by the incidence of lapse risk, mortality risk, disability-morbidity risk and/or life catastrophe risk.



*Best-estimate* is the best-estimate liability in respect of the portfolio of matched obligations, calculated using the basic risk-free rate only.

## 6.2. Impact on policyholder protection

The EMA mechanism generally could lead to negative impacts on policyholder protection as the EMA mechanism would not be able to provide a reasonable degree of certainty that the liabilities to the policyholders could be met without forced sales of assets. This is due to the fact that cash flow matching would not be ensured in the EMA due to the existence of policyholder options such as a surrender option in the insurance obligations. This concern is even more acute when it comes to the alternative EMA for which no matching requirement applies.

The EMA could introduce several risks also affecting policyholder protection. Firstly, undertakings would be allowed to benefit from the measure without eliminating liquidity risk. Secondly, undertakings could be encouraged to take on inappropriate levels of liquidity risk. Furthermore, the EMA incentivises undertakings to invest in assets with low credit quality (i.e. higher default risk) to gain a higher matching adjustment. Finally, the number of assumptions to be made and estimations to be performed for the EMA can introduce additional risks. This is especially true for the application ratio introduced in the EMA, which significantly increases the degree of complexity.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.3. Impact on effective and efficient supervision

Based on the vast majority of NSA feedback, the EMA is prejudicial to effective supervision (especially the alternative EMA) mainly due to the complexity of the device coupled with very high requirements on the supervisory review process that for many NSAs seem not implementable.

### *Complexity of the device*

EMA is a very complex device, both in its calculation and in its implementation. Further to the complexity issues outlined for the MA in section 5, the key factor of complexity to this measure is the calculation of the EMA's application ratio. The application ratio is the consequence of the eligibility of obligations with policyholder options, that may give rise to future premiums and whose risks can lead to an early redemption of the contracts including lapse risk, material mortality risk and disability-morbidity risk. The application ratio restricts the EMA to allow for a possible mismatch stemming from discontinuances or earlier than expected payments on eligible business. Its calibration should be based on a measurement of these cash flow mismatches under stressed conditions. For practical reasons, it was decided in the specifications of the LTGA to apply the shocks foreseen in the Standard Formula, which value the risk over a one-year horizon. It should be noted that a revised calibration of these shocks would probably be necessary, if the EMA should be implemented, to better value the risks arising over the lifetime of the insurance obligations concerned. However, since the lifetime of insurance obligations varies from one undertaking to another, reaching the 99.5% value-at-risk (VAR) would mean a calibration of undertaking-specific shocks, which does not seem feasible and desirable. Besides, applying shocks to cash flows entails several full recalculations of



liability cash flows with new hypotheses (e.g. a 15% increase in mortality rates for mortality risk).

A further element of complexity relates to the sheer impossibility to render practicable the ring-fencing requirement under the alternative EMA. Given that the whole portfolio of obligations of a life insurer would be eligible to the alternative EMA, the ring-fencing condition would be to a large extent artificial and inappropriate. However, in the absence of a complete segregation of assets and liabilities by funds, the alternative EMA would still be overly difficult to apply in the case of contracts with profit participations. Current economic scenario generators (ESG) and asset/ liability models are not able to differentiate the assets according to the granular eligibility criteria set out for the MA (non-redeemable fixed-income instruments). Thus the projections of asset cash flows, necessary for the calculation of future discretionary benefits, may not be performed properly and may incorporate elements of performance related to ineligible assets.

In addition, the possibility to split obligations increases the complexity of the approach.

#### ***New supervisory processes***

Relating to the above described complexity issues, the appropriate application of the EMA cannot be verified on the basis of the regulatory reporting. Only frequent on-site inspections would ensure a correct implementation of the measure. Given that almost all life insurance undertakings can potentially apply the alternative EMA, an effective supervision of the implementation of the measure cannot be guaranteed.

#### ***Comparability of undertakings***

The concerns raised with regard to the application of a MA and the efficiency of supervision (see section 5.3) are amplified in the case of the EMA, for which the level of the adjustment does not only depend on asset portfolios – and hence spreads affecting portfolios – but also on application ratios. It is therefore impossible to interpret or explain the differences in the risk-free rates term structures of two undertakings by the difference in asset portfolios, which is the case for the “classical” MA. For the EMA, the final level of the adjustment and then the final shape of the risk-free rate term structure rely on the interplay between asset cash-in and cash-outflows and liability cash-in and cash-outflows under stressed situations.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## **6.4. Implementation effort**

#### ***For undertakings***

The costs would be higher for the EMA than for the “classical” MA due to the higher complexity of the former. Participating undertakings provide a great variety of reasons why the EMA will consume significant resources on an on-going basis. Most of these overlap with the complexity issues described above.

#### ***For NSAs***

The EMA is the most time and resource consuming LTG measure. The main reasons for this are stated in section 6.3 above.



## For EIOPA

The implementation effort would be similar to the one for the “classical” MA, unless EIOPA would also be expected to provide fundamental spreads for investments below investment grade (in case of the alternative EMA).

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.5. Incentives for good risk management

### *Quality and characteristics of assets*

The EMA and especially the alternative EMA provides false risk management incentives mainly with regards to credit quality and liquidity characteristics of assets.

On the first point, the measure application may effectively lead to an increase in the risk appetite of undertakings seeking to maximise the overall balance sheet benefit by investing in instruments with higher spreads as no limits on the credit quality of eligible assets exist.

On the second point, the EMA involves a complex and opaque calculation of the application ratio. But more significant than this are the risks related to monitoring the liquidity needs of undertakings making use of this device, which incentivises unmitigated investment in long-term illiquid debt to back potentially liquid liabilities.

### *Internal rate of return formula*

NSAs and undertakings noted that an internal rate of return calculation based on the liability cash flows and the market value of assets is highly problematic when asset and liabilities are not perfectly matched (which is generally more relevant for the extended MA covered in the next chapter as only minor mismatches are allowed for the “classical” MA). This effectively incentivises undertakings to hold a small matching portfolio, thereby boosting the internal rate of return. Participants proposed that a methodology based on the asset cash flows would correct this. The degree of mismatching could then be explicitly allowed for in another way.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.6. Impact on financial stability and prevention of systemic risks

The direct impact on financial stability seems limited given the very broad eligibility criteria for assets and the removal of potentially noticeable cliff edge effects for this measure. However, given the removal of a large number of application restrictions (versus the “classical” MA), the high complexity of the measure and the limited supervisability, there would be a risk of this measure harming the stability of the insurance sector.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.7. Impact on (re)insurance undertakings' solvency position

### 6.7.1. All undertakings

The following chart displays the percentage of TP that is eligible for Extended MA in each member state, based on all participating undertakings.

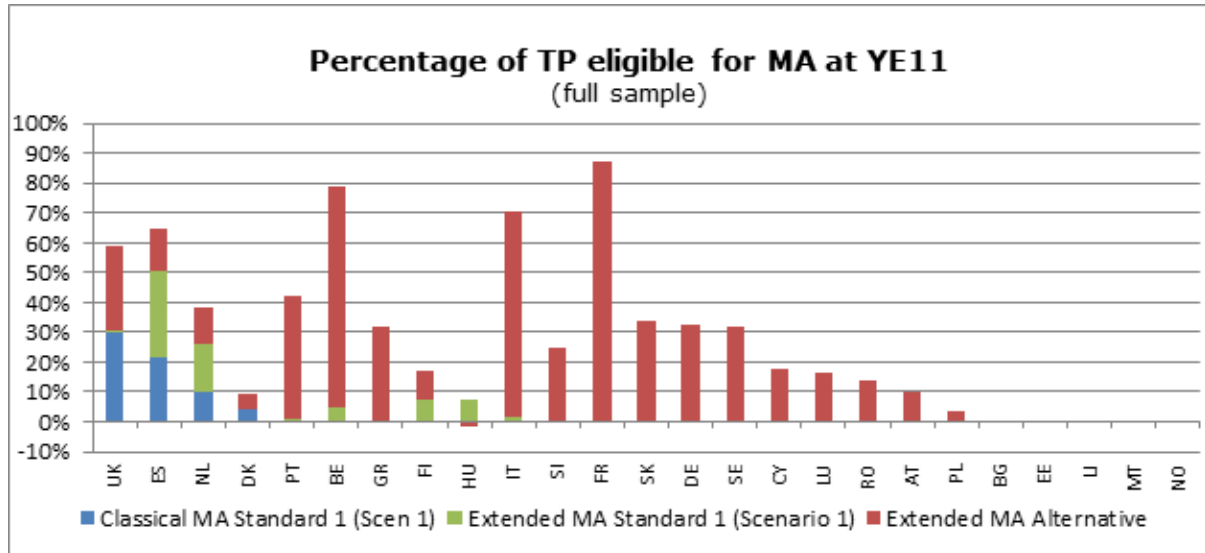


FIGURE 35: PERCENTAGE OF TP ELIGIBLE FOR MA AND EMA AT YE11

Concerning the standard EMA, markets which have the highest percentage of TP eligible are those which already most benefit from the “classical” MA. Hence, the standard EMA does not significantly serve the purpose of extend the benefit of this device to other markets. Concerning the alternative MA, a large part of the European insurance market can apply it. French, Italian and Belgian samples are those which most apply the alternative EMA.

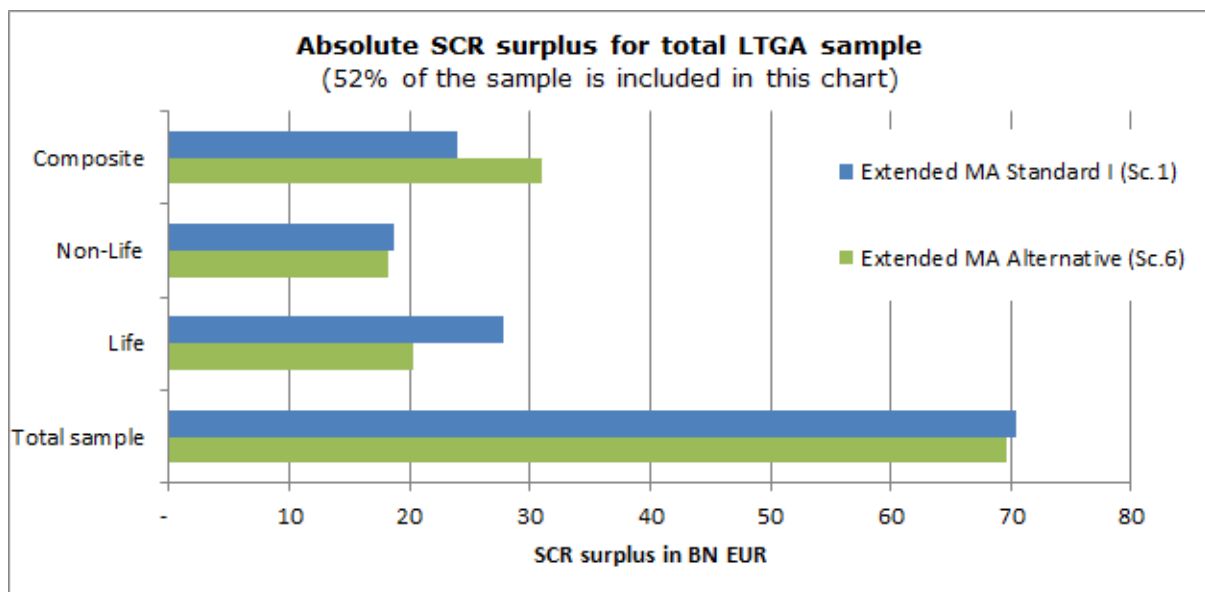


FIGURE 36: ABSOLUTE SCR SURPLUS IMPACT OF EMA AT YE11

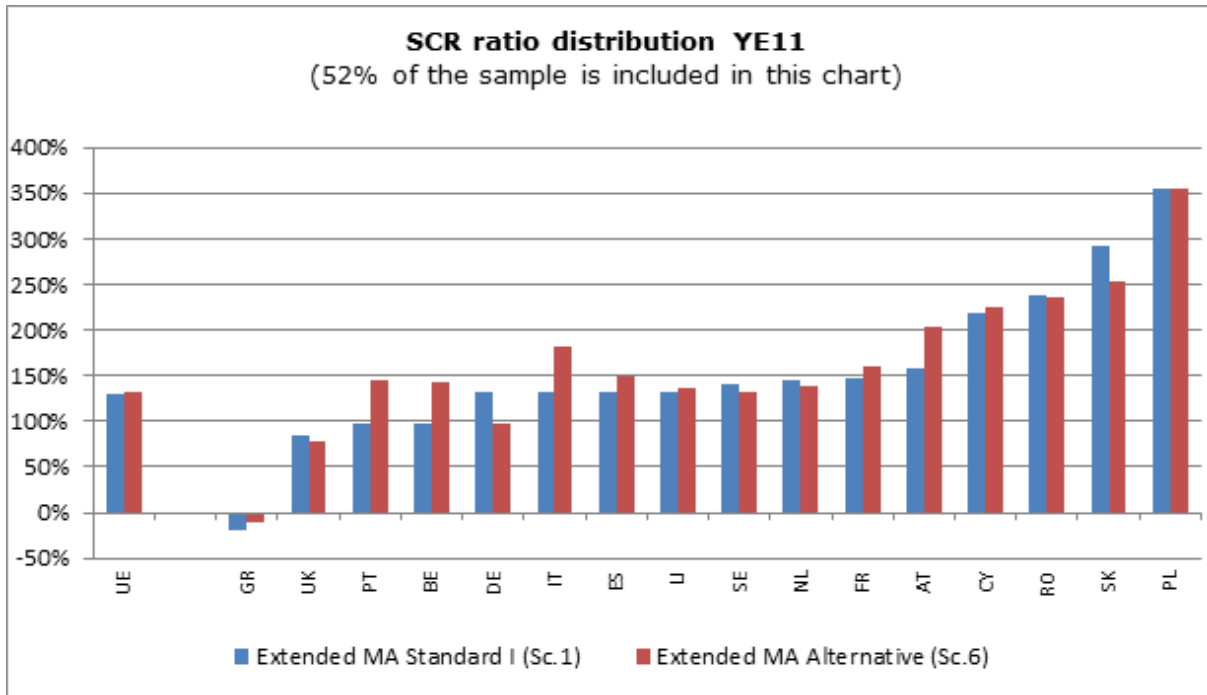


FIGURE 37: SCR RATIO DISTRIBUTION AT YE11

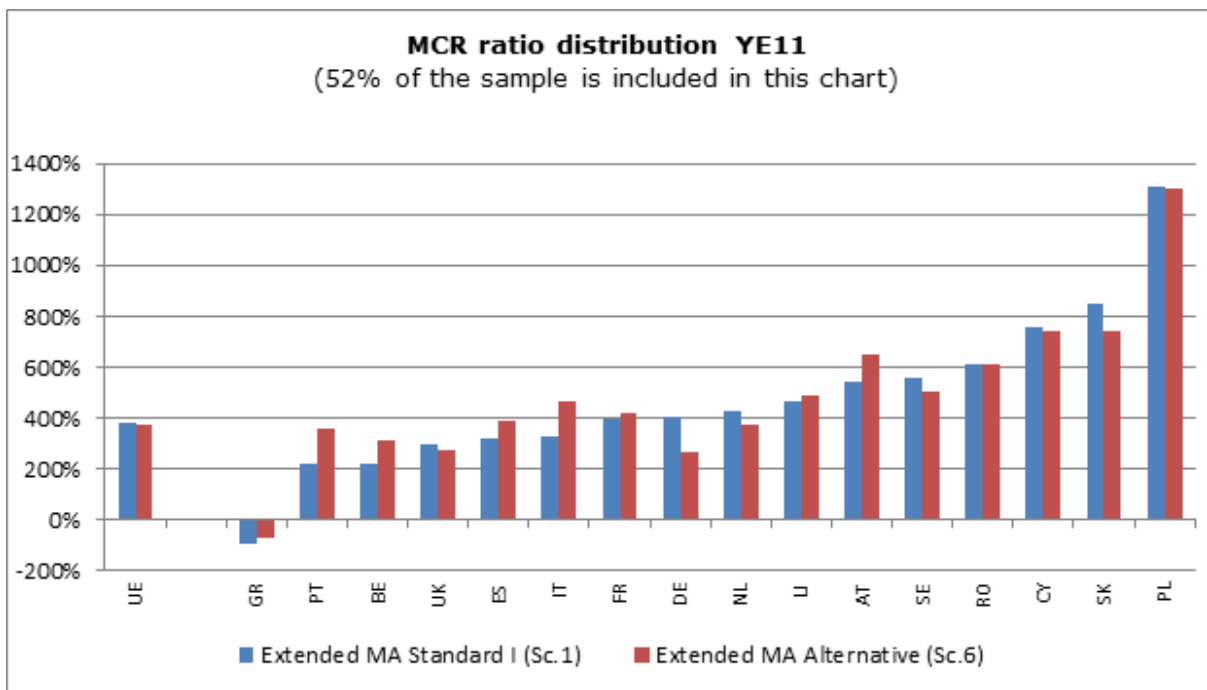


FIGURE 38: MCR RATIO DISTRIBUTION AT YE11

The following graphs focus on the impact of different underlying drivers influencing the application of the EMA:

- A. Credit Quality of eligible assets
- B. Types of assets
- C. Matching criteria
- D. Application ratio
- E. Determination of Fundamental Spread

## F. Splitting

### A. Credit quality of eligible assets

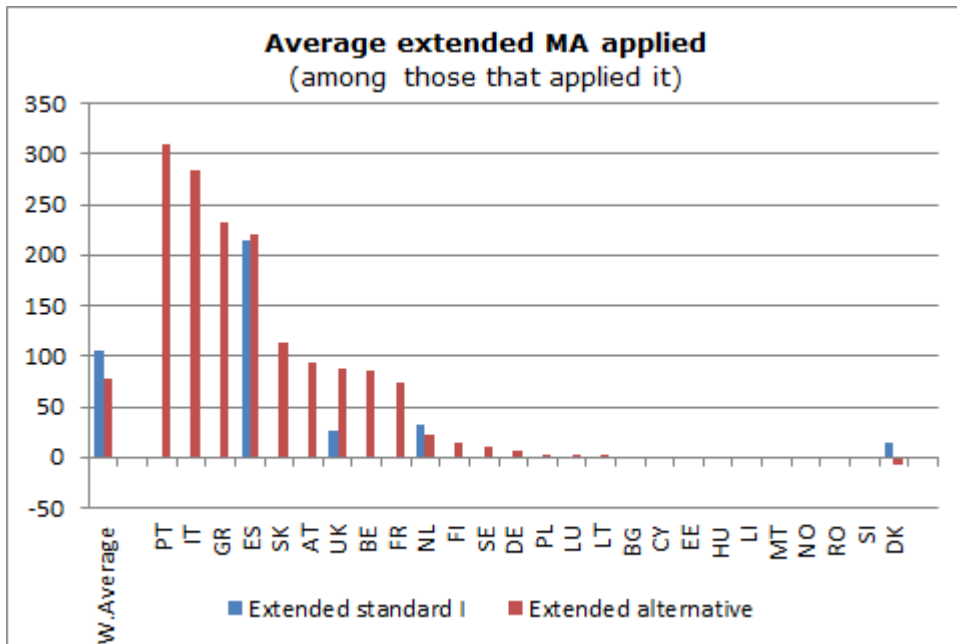


FIGURE 39: AVERAGE LEVEL OF EMA APPLIED AT YE11 BY MS

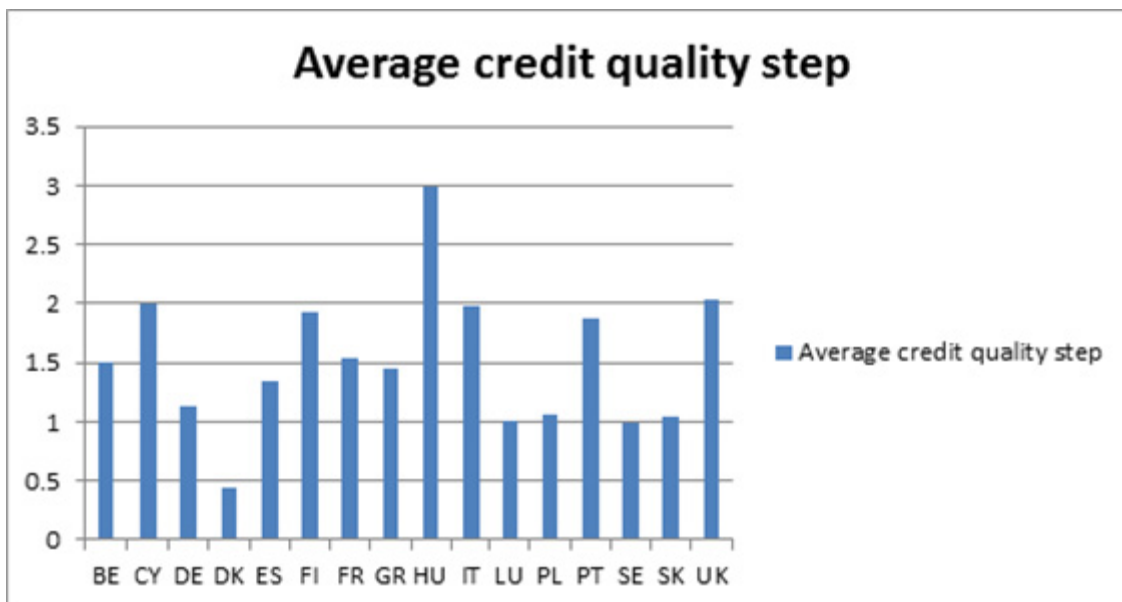


FIGURE 40: AVERAGE CQS OF EMA ASSETS AT YE11 BY MS

### B. Types of assets

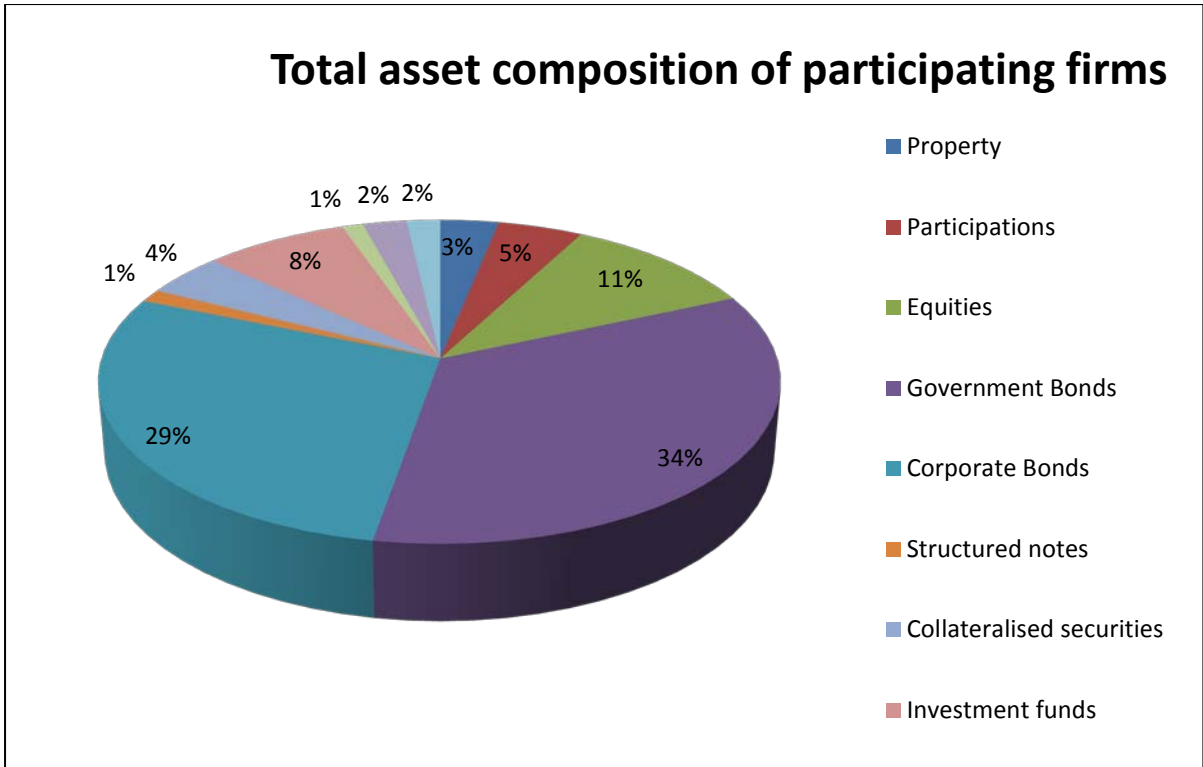


FIGURE 41: TOTAL ASSET COMPOSITION OF PARTICIPATING UNDERTAKINGS YE11

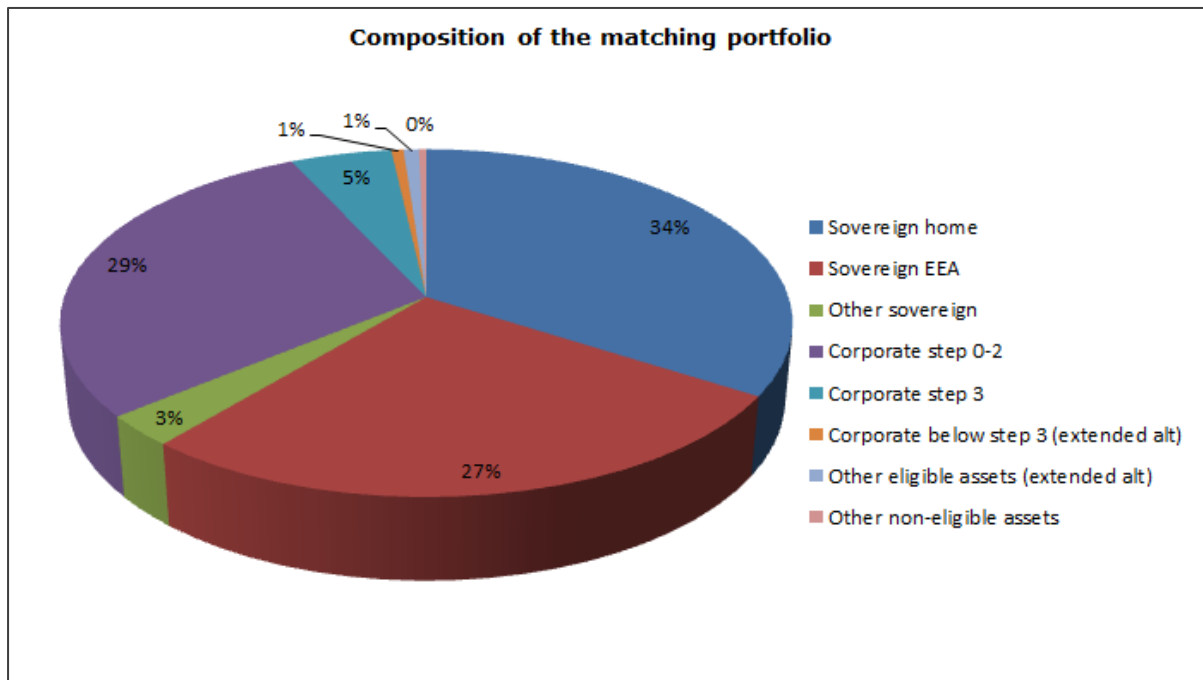


FIGURE 42: COMPOSITION OF THE EMA MATCHING PORTFOLIO YE11

It should be noted that the LTGA data collection on assets included in the MA portfolios was not exhaustive. Also, the requested impact analysis of applying hypothetical assets portfolios was not possible due to very limited data submissions on the related sensitivity analysis d) to scenario 6. The same is true for sensitivity analysis e)-i) relating to that scenario.

### C. Matching criteria

For the EMA, a strict cash flow matching only applies for the Standard versions (within the 15% limit introduced for the purpose of the LTGA). Therefore the degree of mismatch needs to be considered in the Alternative version.

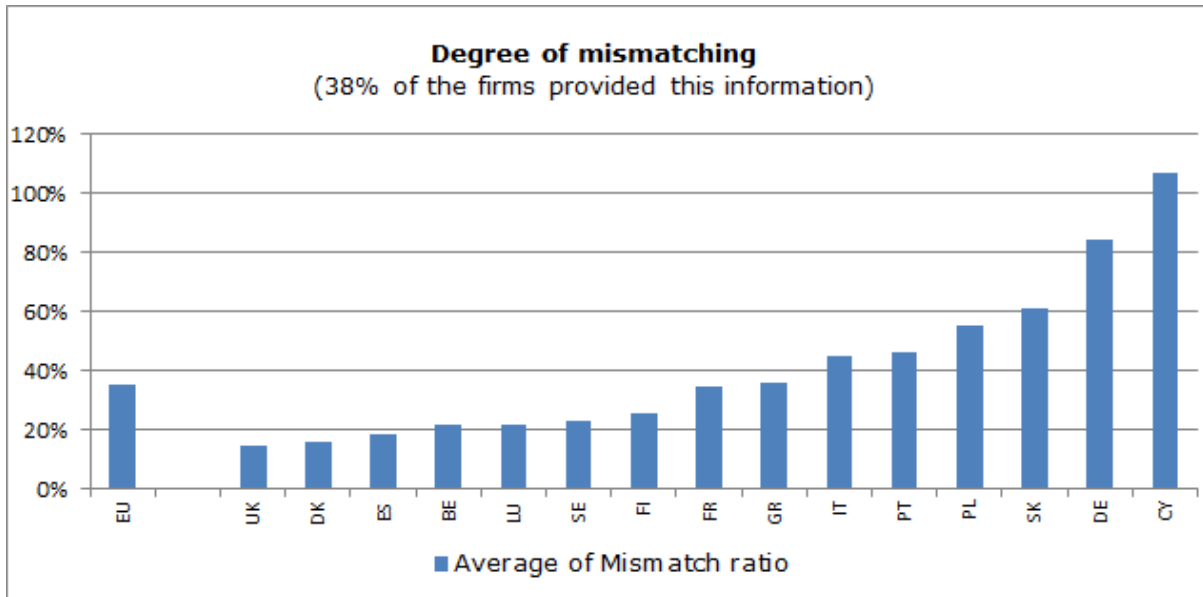


FIGURE 43: DEGREE OF MISMATCHING FOR EMA

The key drivers of the current mismatch could not be explored during the LTGA, but should be explored further in case of an implementation of the measure (e.g. availability of assets beyond the LLP, the fact that surplus are not taken into account to cover future mismatch).

### D. Application ratio

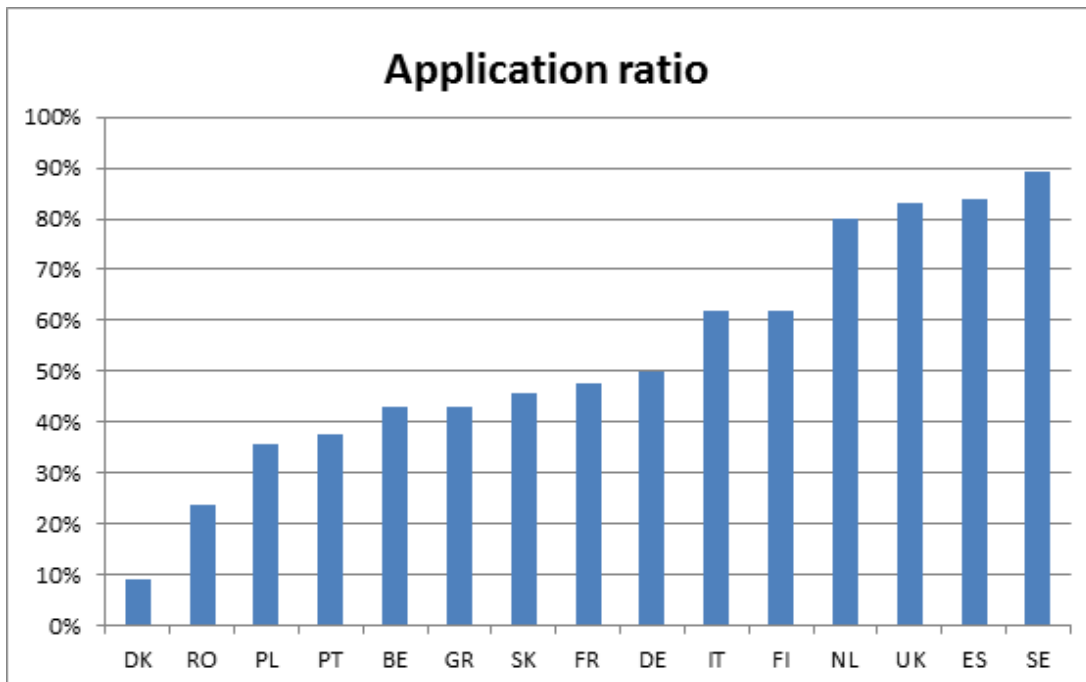


FIGURE 44: EMA APPLICATION RATIOS

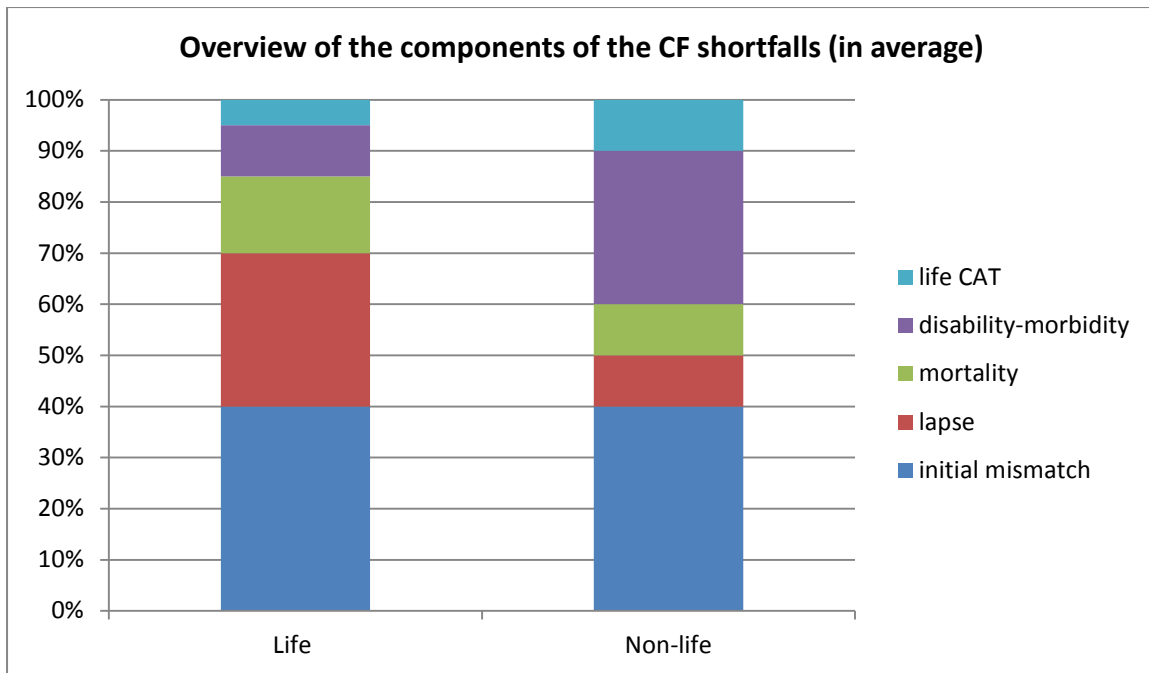


FIGURE 45: COMPONENTS OF THE CASH FLOW SHORTFALLS

Besides the initial mismatch, lapse risk is the key driver of the application ratio for life business.

It should be noted that an “assessment of the distribution of lapse and early surrender risk for products with policyholder options (per type of policy) and likely portion of matching adjustment to be attributed to policies, in particular the robustness of the distribution in stressed situations” was not possible based on the LTGA submissions.

#### E. Determination of fundamental spreads

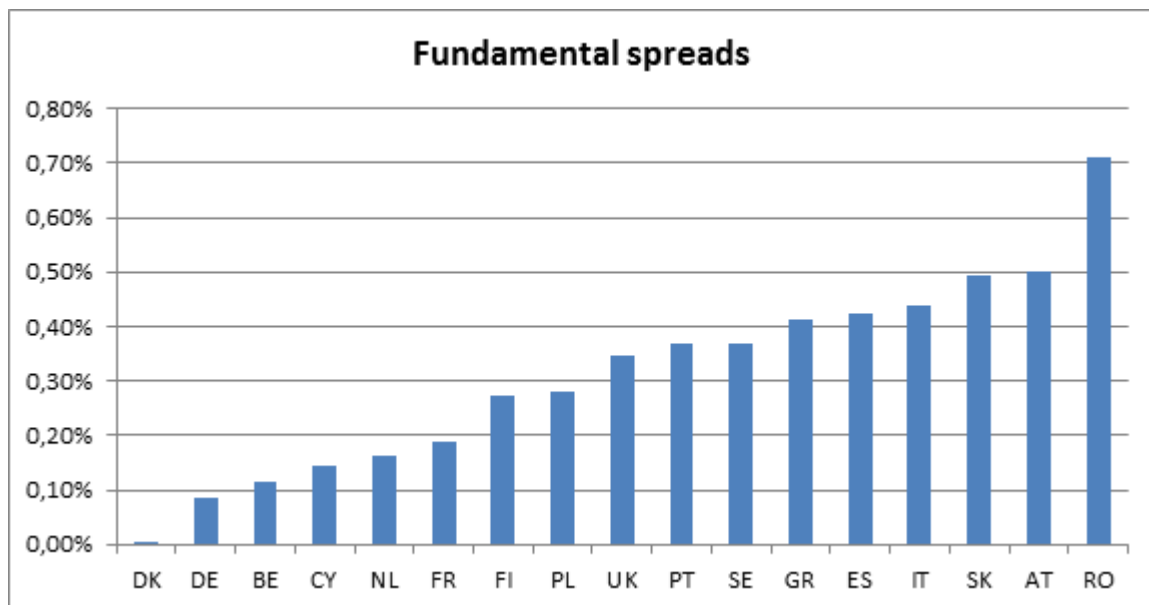


FIGURE 46: LEVEL OF REPORTED AVERAGE FUNDAMENTAL SPREADS FOR EMA AT YE11

The above chart displays the levels of fundamental spreads applied by LTGA participants in different Member States.



## F. Splitting

The splitting of liabilities and assets was mentioned to be a challenge by a number of participants. No quantitative analysis regarding the impact of splitting can be provided based on the LTGA submissions. Furthermore, the LTGA submissions did also not enable EIOPA to perform a comprehensive identification of contracts for which a possibility to split exist.

### 6.7.2. Undertakings by size

The complexity of the EMA may be a barrier to its application by smaller insurers. This is reflected in the fact that participants in the exercise indicated that the extended MA is by far the most resource intensive of the measures tested, and that its complexity would in many cases be prohibitive. Clearly this would be more of an issue for smaller undertakings with less specialized resource to dedicate to onerous calculations required by the EMA.

Smaller undertakings may also have more difficulty making changes to their asset allocations in order to meet the admissibility requirements of the EMA. To some extent all undertakings may face difficulties in switching asset classes though, so the more significant issue for smaller undertakings would likely be the complexity of the device.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

### 6.7.3. Undertakings by type

Unlike the “classical” MA, the extended version was applicable to life business as well as non-life annuities. However, reinsurance business was excluded which does not seem to link to technical or prudential reasons where the application conditions are otherwise met.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

### 6.7.4. Group aspects

On balance, the EMA measures do not appear to present any particular challenges for insurance groups beyond the general challenges related to the application of multiple risk-free rate adjustments.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

### 6.7.5. National market insights

The measure is applicable relatively broadly across Member States. Therefore, no particular observations regarding individual Member States have been made.



### 6.7.6. Cross-border business

*The observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

### 6.7.7. SII balance sheet volatility

Most participants and NSAs alike acknowledged that the EMA measures would reduce balance sheet volatility stemming from liquidity-related price movements of their debt holdings. However, incentivising unmitigated investment in long-term illiquid debt to back *liquid* liabilities clearly exposes insurers and their policyholders to the associated risk of *runs*. This is a threat to policyholder protection as well as financial stability since it undermines the accurate assessment of ruin, which depends on the actual market values obtainable for assets, where these may need to be sold unexpectedly to meet liquid liabilities. The price effects of illiquidity in the assets should therefore only be reflected in liabilities that are likewise illiquid, as in the case of the “classical” MA.

On balance the issues with the EMA outweigh the potential the device has for mitigating short-term volatility, rendering it unsuitable for the long-term guarantees package in the view of most supervisory authorities.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.8. Impact on competition

The EMA could have adverse consequences in terms of competition in the market due to the national option design.

Furthermore, the EMA fails to ensure the same type of product is dealt with in exactly the same way throughout Europe, according to the current features e.g. 'hard-to-interpret' application conditions, local supervisors which are allowed to accept (as a member state option only) the application of matching adjustment, or the fact that only activities performed in the Member States where the undertaking has been authorized.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.9. Impact on Long Term Investments

This is discussed in the section ‘Incentives for good risk management’ above.

## 6.10. Other considerations

Participants noted that in order to achieve a consistent and sound treatment in the European Market for the “classical” and extended MA, the floor to apply for the calculation of the fundamental spread should be the same, as there is no technical justification for this distinction (same floor).

Few stakeholders commented that unpredictable risks, such as mortality risk, are already considered in the application ratio and there is no justification to penalize EMA in



the floor of the fundamental spread, which, therefore, should remain constant regardless of the features of the matched liabilities. For similar reasons, the initial mismatch should not be taken into account in the application ratio, but it should only capture the additional mismatches that may arise as a result of the application of shocks against the risks of mortality, lapses and so on. Otherwise, the application of both MA (“classical” and Extended) could lead to unjustifiable and distorted results. For example, for a pure annuity for life with an initial 13% mismatch, a 100% classic MA could be applicable; however a life annuity with residual mortality risk and 4% mismatch can only apply an EMA of 96%. Similarly, for a non-life annuity with a 4% initial mismatch just a 96% application ratio could be applicable because only the extended MA could be used and initial mismatches should be taken into account. However, a 100% application ratio could be considered in case it was a pure life annuity, where the “classical” MA would be applicable. This fact could be considered an inconsistency as both products would be subject to exactly the same risks but a different treatment would apply nonetheless.

*In addition to the outlined aspects which are specific to the EMA, most observations presented in the respective subsection of chapter 5 on MA are also valid for the EMA.*

## 6.11. Main technical findings on the Extended MA

Supervisory authorities expressed a significant concern that rewarding insurers for holding illiquid assets against liquid liabilities would incentivise them to take on inappropriate levels of liquidity risk, and in effect, to operate as shadow banks. Maturity transformation is the traditional business of banks, which finance illiquid long-term investments (such as loans) with liquid liabilities (deposits). In addition to having access to lenders of last resort, the regulations applicable to banks set out explicit liquidity requirements. Solvency II contains no such provisions. Incentivising unmitigated investment in long-term illiquid debt to back liquid liabilities clearly exposes insurers and their policyholders to the associated risk of *runs*. This is a threat to policyholder protection as well as financial stability since it undermines the accurate assessment of ruin, which depends on the actual market values obtainable for assets, where these may need to be sold unexpectedly to meet liquid liabilities.

The complexity of the device makes it burdensome (or even barely possible) for industry and supervisors to operate and in the extended alternative form, can lead to poor risk-management incentives due to the very high spreads observable on assets of credit quality steps 4 and lower.

On balance these issues outweigh the potential the device has for mitigating short-term volatility, rendering it unsuitable for the long-term guarantees package in the view of EIOPA and most supervisory authorities.

### *EIOPA’s main observations and technical advice on the Extended Matching Adjustment*

#### **EIOPA’s main observations on the Extended MA:**

Unlike the “classical” Matching Adjustment, the extended version raises significant concerns in terms of providing false risk management incentives, in particular in terms of credit quality of assets and with regards to the management of liquidity risk. This severely impacts the level of policyholder protection. These concerns are further



increased by the high complexity of the measure's calculations and implementation which would also require an extensive supervisory review process which is not seen as implementable by the majority of supervisors.

Based on clear indications from LTGA participants, the measure would, furthermore, create a competitive disadvantage for small and medium size undertakings as they might not be able to apply the adjustment due to its complexity.

**EIOPA's technical advice on the Extended MA:**

Based on the outlined major concerns with regards to policyholder protection, competition and supervisability, EIOPA advises to **exclude the Extended Matching Adjustment from the LTG package.**



## 7. Transitional Measures

### 7.1. Purpose of the measures and highlights of the tested approach

A transitional measure is proposed for obligations that are severely impacted by the introduction of Solvency II, i.e. the value of these obligations significantly differs under Solvency II compared to Solvency I. The transitional measure tested in the LTGA is based on the relevant risk-free interest rate term structure to calculate the best estimate with respect to specific insurance or reinsurance obligations. The idea is to implement the valuation change gradually over a sufficiently long time-period, currently proposed to be 7 years.

The approach tested in the context of the LTGA involved that undertakings would generally apply Solvency II principles. However, a weighted average of Solvency II and Solvency I interest rate curves is used for valuing existing liabilities and for calculating the capital requirements. Thereby, the Solvency I interest rate is fixed at the date of implementation of Solvency II. This particular design of the measure relates to the issue that while in most national frameworks the Solvency I rate is supposed to be “prudent”, in the current market situation (low interest rates) the values taken directly from markets are stricter in the sense that they could lead to a higher valuation of technical provisions, especially if the Solvency I rate is based on a historic average.

It should be noted that the transitional measure would apply to business in force at Solvency II inception only, i.e. not to new business written thereafter, and the effect of the measure needs to be fully disclosed to the public. Furthermore, the tested approach included some restrictions, for example the measure applies to certain life obligations only<sup>12</sup>. It cannot be applied by undertakings to any obligations already under the Matching Adjustment and it does not apply to cross-border business. Three LTGA scenarios relate to the application of the transitional measure:

- Scenario 8: Transitional measure on all existing business at YE11 assuming to be 0 years into the transitional period;
- Scenario 9: Transitional measure on business related to paid-in premiums only at YE11 assuming to be 0 years into the transitional period;
- Scenario 11: Transitional measure on all existing business at YE04 assuming to be at 0 years into the transitional period;


### 7.2. Impact on policyholder protection

#### *Relating to existing policyholders*

The option of a smooth transition between different regulatory regimes generally provides a very positive contribution to policyholder protection. This is especially the case for long-term business where undertakings have a good chance to close the liability valuation gap over time without cutting policyholder benefits.

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<sup>12</sup> If technical provisions were determined using the interest rate referred to in the laws, regulations and administrative provisions adopted pursuant to Article 20.B.a of the Life Insurance Directive (2002/83/EC).



As the transitional measure tested by EIOPA as part of the LTG package was designed to smooth the transition between two very different regulatory regimes, it cannot be considered truly market consistent, especially during the first years of the transitional period.

By definition, liabilities valued under the tested transitional approach are lower than under a fully market consistent approach. A number of NSAs did raise this concern in the context of policyholder protection. However, it seems impossible to overcome this concern in any transitional tool that is trying to close the liability valuation gap over some time. The need to publically disclose the effect of the measure seems to provide some counterbalance to the concerns as it creates peer pressure to close the gap.

In order to ensure policyholder protection, the measure needs to be accompanied by a sound supervisory review process that includes regular reporting on actions taken and progress made and that also ensures a fair treatment of different cohorts of existing policyholders.

Vital points for the implementation of the measure in the light of policyholder protection are:

- Given the (partial) departure of this measure from market consistent principles, it seems to be useful to implement Pillar 2 measures that carefully review plans for dividend payments and profit participations of undertakings.
- Furthermore, an especially strict supervisory approval and review process is required for undertakings that are already under recovery measures when entering into the Solvency II framework.

#### *Relating to new policyholders*

Undertakings applying the transitional measure will in most cases need to overcome a quite significant gap in liability valuations over a certain period of time. It is crucial to ensure that this gap is not closed at the cost of new policyholders. This can be ensured by a sound supervisory review process.

On the other hand, it is also clear that new business should not benefit from the transitional measure, i.e. harm the protection of existing policyholders.

### **7.3. Impact on effective and efficient supervision**

#### *Collective supervisory tool for the transition process*

A collective Pillar 1 solution to the described issue of transitioning from one regulatory framework to another seems to enable supervisors to run a relatively efficient process. However, as indicated above, the measure would need to be supported by an increased focus on the supervisory review process.

#### *Limited application across Member States*

Many NSAs do not anticipate additional efforts regarding the transitional. However, this view is heavily impacted by the fact that the tested measure did only seem effective in a few Member States. Four NSAs stated that the tested transitional would be favoured over a MA application. The Member States where the tested measure is effective are those where there is a noticeable difference between current SI and SII rates.



A number of NSAs flagged that the tested mechanism is currently not very effective for their markets because of the tailored design. If the measure could be accompanied with a tool to directly cover the closing of the Technical Provisions gap, this would result in a broader application across EU markets.

### *Challenges to the supervisory review process*

Some participants mentioned challenges of calculating future discretionary benefits on a portfolio level which spans over various sub-portfolios with different Solvency I rates. Also, technical difficulties are expected from the second year of the transition period onwards:

- separation of existing business and new business;
- in particular, separate calculation of surplus participation for the existing business and new business;
- consideration of new business with separate Solvency II valuation;
- valuation of options and guarantees for business for which the transitional is applied.

The supervisory review process will hence assess the adequacy of the approaches chosen to deal with these technical difficulties. In addition, the proposed split of paid-in and future premiums as tested in scenario 9 of the LTGA could lead to an even more difficult supervisory review process.

The use of this transitional measure is also expected to require additional verification by the respective NSA regarding whether the criteria for obligations and type of undertaking are met. Prior to implementation, this would be a one-off effort for NSAs.

It was also stated that the transitional could affect the comparability of the valuation of Technical Provisions for the same products within the same undertaking depending on whether the product belongs to existing business or to new business. The valuation mismatch and the resulting balance sheet volatility were noted as an unwelcome and unjustified risk to long-term solvency making it difficult for supervisors to anticipate, manage and plan.

## **7.4. Implementation effort**

### *For industry*

For the transitional measure, participants delivered the following comments regarding the implementation:

- The transitional is very complex from the undertakings' point of view and some NSAs expect that several undertakings will not apply this measure to avoid high implementation cost;
- In relation to the effect of a 7 year transitional the implementation effort is considered to be too high.

The complexity also relates to the fact that undertakings would need to run two full Solvency II balance sheet and capital requirement calculations for key reporting dates as the effect of the measure needs to be publicly disclosed. This transparency is vital to the credibility of the Solvency II framework.



As indicated in the introduction section of this report, only about 20% of participating undertakings provided results for scenario 9. To a large extent, this is due to the circumstance that the split of paid-in and future premiums was technically not feasible for the undertakings. EIOPA generally shares the view on the high implementation effort relating to a split of paid-in and future premiums. However, not introducing such a split could lead to an inappropriate application, e.g. a dynamic premium increase for regular premium insurance products is the key new business driver in some Member States where the tested measure was applied. So including these premiums in the application of the measure would contradict the scope of the measure. Suitable technical short-cuts therefore need to be developed to prevent the inadequate application of the measure resulting from the technical inability to split premiums within one contract.

#### *For NSAs*

The implementation effort for NSAs in Member States where the transitional measure is applied seems relatively high as indicated in section 7.3. This is linked to higher efforts in the supervisory review process and to the verifications of conditions to the application of the measure pre-implementation. However, NSAs concerned consider this higher effort adequate and necessary in the light of preventing any unintended consequences of the measure application.

#### *For EIOPA*

EIOPA does not expect significant implementation effort with regards to the transitional measure.

### 7.5. Incentives for good risk management

The transitional measure introduces the market consistent valuation only gradually over a number of years. Hence, there might be a risk that incentives for good risk management are not very high, especially in the initial years. As disclosure of this measure is needed and an intensified supervisory review process is envisaged, this potential issue might be overcome.

Some NSAs also flagged that the transitional measure in its current and tested design complicates hedging strategies by insurance undertakings as it applies a non-market consistent risk-free rate. This might lead to an unstable solvency position and to significant difficulties when weighing up this artificial position against managing the current market risks relevant to the business.

### 7.6. Impact on financial stability and prevention of systemic risks

In terms of the impact on financial stability, the implementation of transitional measures aims at providing insurance markets that are strongly impacted by the implementation of Solvency II with a “softer landing”. In this context, those measures should be seen as generally having a positive impact on the stability of the EU insurance sector as a whole.

On the other hand, the LTG transitional measure might perhaps lead to a further deepening of issues that are not just related to short-term market movements, but are of a more structural nature. In this case, the measure application could delay the restructuring of affected market segments, ultimately resulting in an even larger impact on the stability of the EU insurance sector after some years. Hence, it is important to

find the right balance in terms of the length and conditions of the LTG transitional measure.

## 7.7. Impact on (re)insurance undertakings' solvency position

### 7.7.1. All undertakings

The analysis of the transitional impact on solvency positions across the Member States reveals that an application of the measure reduces surplus and SCR/ MCR ratios. However, this is related to the application of the transitional measure also in cases where the SI interest rates are lower than the SII ones, e.g. in PL, FR, IT.

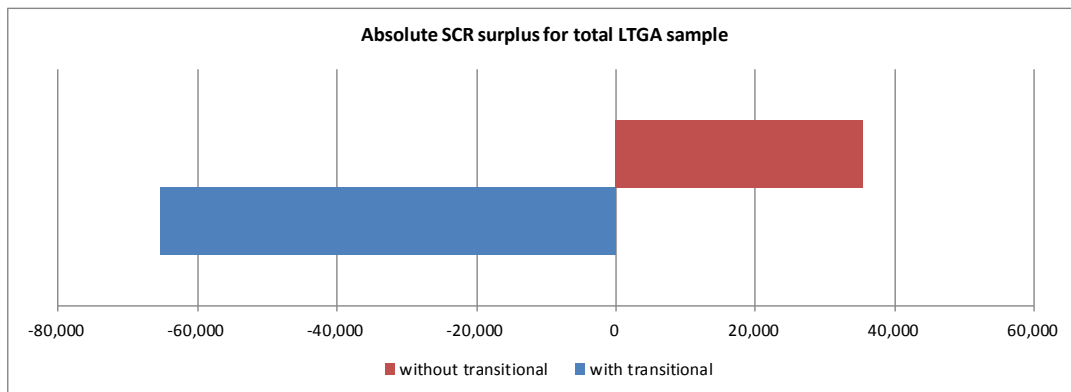


FIGURE 47: ABSOLUTE SCR SURPLUS FOR THE TOTAL SAMPLE OF SCENARIO 8

Based in the below analysis, it seems that the transitional measure results in an increase of the average solvency position at YE11 compared to a 50 bps CCP application for a number of countries displayed on the right hand of the chart. However, the underlying data is not seen as fully reliable based on the views of some NSAs and most CCP levels have been estimated to be above 50 bps at YE11.

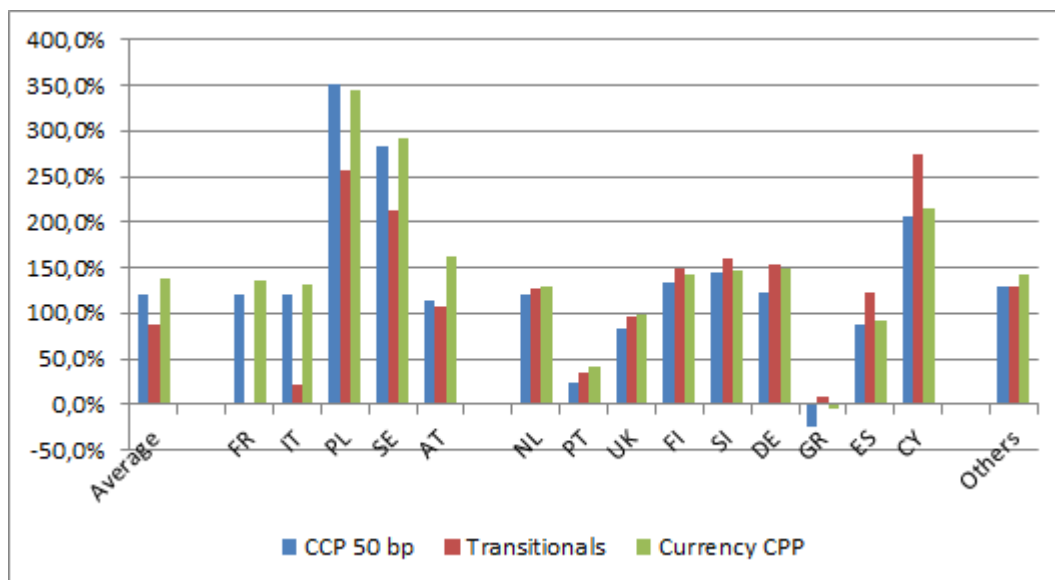


FIGURE 48: SCR RATIOS WITH APPLICATION OF A 50 BPS CCP AND CURRENCY CPP VS SCENARIO 8



### 7.7.2. Undertakings by size

It is likely that small undertakings may have more problems with the technical difficulties, which arises with the framework as tested in the LTGA. However, from the LTGA submissions there is no evidence that the impact of the transitional measure differed for small and large undertakings.

### 7.7.3. Undertakings by type

The measure is by definition restricted to life insurance business. Life insurance companies with a large amount of long-term guarantees that are relatively high (compared to the current level of the risk-free rate) will see the highest positive impact of this transitional measure.

### 7.7.4. Group aspects

There might be additional complexity relating to the application of the transitional measure on group level compared to solo level, especially if different transitional curves are applied at group level for the same currency across subsidiaries. This complexity is the same for other LTG measures that might result in different risk-free rate adjustments for the same currency.

### 7.7.5. National market insights

Selected examples:

FR/ IT: The transitional was not applicable due to very low maximum interest rates.

IE: For the life market in Ireland, around two third is cross-border business which is excluded from the measure.

UK: The transitional measure is not suitable for UK insurers given that it will determine the discount rate based on a rate fixed at the implementation date, rather than applying merely the methodology at the implementation date.

### 7.7.6. Cross-border business

By design, the transitional is not applicable to cross-border business, i.e. there is no impact for that business in the context of the LTGA.

### 7.7.7. SII balance sheet volatility

While the measure has not been developed as a tool that reduces “artificial” volatility, its current design (based on a slow convergence to the market consistent risk-free rate) might create smoothing effects on technical provisions, especially in the first years of application. This is due to the fact that only a part of the real market movements is picked up in the transitional rate. On the other hand, this could also lead to more volatility in the Own Funds.



## 7.8. Impact on competition

### *Within a Member State*

It is envisaged that the application of the measure will need to be agreed with the national supervisors by each undertaking. This might result in some undertakings being able to apply the measure while others are not. This situation could lead to significant competitive imbalances on the respective Member States, especially if no additional measures relating to dividend payments or profit participations are linked to the application of the transitional measure. (Many competitors in the with-profits market consider the level of profit participations granted as a key factor influencing new business sales.)

### *Relating to cross-border business*

The exclusion of cross-border business from the measure can lead to quite large distortions in Member States where the transitional measure is widely applied. As the concerned undertakings who are not authorised in the Member States will need to close their gap in interest rates at the start of the Solvency II implementation date, this could lead to serious disruptions in their businesses and potentially also have an effect on their new business.

### *Across Member States*

It was mentioned by participants, that there are also potential competitive issues across Member States. For example, the assumption is that Member State A undertakings can apply the transitional measure as tested, but Member State B undertakings cannot. However, Member State B undertakings also have an issue with the value of their technical provisions under SI vs. SII, but this is triggered by the implementation of the Risk Margin rather than the difference in applied interest rates. In this case, undertakings in Member State B might need to increase their funding, while undertakings in Member State A have several years to overcome the issue.

## 7.9. Impact on Long Term Investments


The measure does generally not seem to provide any special incentives or disincentives to invest in long-term assets of any type.

However, undertakings with considerably longer durations of liabilities compared to assets might have fewer incentives to close this gap if they are provided with more time to fully implement the market consistent valuation principles. Sound Pillar 2 processes can avoid such potential issues.

## 7.10. Other considerations

Without implementing a strong supervisory review element and strict conditions to LTG transitional measures in general, the supervisory community runs a reputational risk of fostering the delay of overcoming structural issues of individual undertakings or even whole market segments. So again, a Pillar 2 is a key success factor for this measure.

One NSA considered the length of the transitional measures to be insufficient, since the average duration of assets in the respective market is about 10 years whereas the



duration of the liabilities is much longer (up to 30 years). The measure should be “affordable” for market participants.

## 7.11. Main technical findings on the Transitional measure

The main positive aspects of the tested Transitional approach are:

- It offers a smooth transition between different regulatory regimes which could ultimately lead to more stability in the insurance sector;
- It provides supervisors with the possibility to collectively address issues related to the different valuations of liabilities (based on different discount rates applied) under Solvency I compared to Solvency II;
- Its application results in a relatively high comparability of results based on the need to disclose the full impact.

Further key observations that have been made with regards to the tested transitional measure:

- The application of the measure is only suitable for very few Member States which have life long-term guarantee products discounted with relatively high rates under Solvency I;
- In terms of quantitative impact, the effectiveness of the measure could not be fully supported with LTGA data (which seems to be related to the quality of data for scenario 8);
- The complexity of the measure triggers technical difficulties, especially from the second year of the transition period onwards:
  - separation of existing business and new business;
  - in particular, separate calculation of surplus participation for the existing business and new business;
  - consideration of new business with separate Solvency II valuation;
  - valuation of options and guarantees for business for which the transitional is applied.
- There is a risk of transitional measures in general creating a delay in overcoming structural problems of undertakings or certain markets which could harm policyholders and the stability of the insurance market; a strong supervisory review process and strict application conditions could reduce this risk;
- The measure could also lead to competitive distortions between undertakings applying it and undertakings not applying it; Pillar 2 measure relating to the review on dividend payments and profit sharing plans could prevent such distortions to a large extent;
- Implementation efforts are relatively high for undertakings and NSAs;
- The proposed transitional period of 7 years is not considered to be sufficient by some NSAs.

Finally, it should be noted that though there are a number of drawbacks to LTG Transitional measures, there do not seem to be real alternatives to implementing these measures for existing business in cases where the change of regulatory framework results in significant negative impact on solvency positions.



## *EIOPA's main observations and technical advice on the Transitional Measures*

### **EIOPA's main observations on the Transitional Measures:**

EIOPA fully supports the implementation of Transitional measures as part of the LTG package. Any such transitional measure should, however, be aligned with the following principles: (1) truly transitional nature (no grandfathering); (2) should be sufficiently simple to allow implementation in undertakings at proportionate costs; (3) supervisable; (4) transparent, i.e. full disclosure and minimal interference with SII methodology; (5) accompanied by an intensified supervisory review process including the review of dividend and profit participation plans.

Transitional measures are not primarily aimed at reducing the volatility of the Solvency II balance sheet, but rather at providing a smooth transition between different regulatory regimes which would ultimately lead to more stability in the insurance sector. Therefore, EIOPA believes that transitional measures are important for a smooth transition.

By definition, this approach is aimed at providing a positive effect regarding policyholder protection (reducing risk of companies not being able to afford the transition) and financial stability. But it also comes with certain risks in both areas that, if appropriately designed, can be addressed. Right incentives must be provided (thus transitional measures should be preferred to grandfathering type of provisions) to undertakings and, to ensure policyholder protection a simple and transparent process must be provided, reinforced with an enhanced supervisory review process (SRP). This includes an appropriate length of the period of applicability, and full transparency regarding the consequences of such application.

The Transitional tool tested effectively addresses the issue of the technical provisions gap for certain types of businesses with long-term guarantees. The specific design generally limits the application to some Member States where such products are offered or have been offered. However, the general issue of gaps in technical provisions due to the inception of Solvency II will most likely also exist in other Member States for different reasons, e.g. the implementation of the risk margin, revised contract boundaries or differently calibrated market-consistent risk-free rate curves. Also for this a suitable transitional should be found.

A relevant issue to consider is linked to the underlying nature of transitional measures: they should focus on the value of the promise made under Solvency I (technical provisions) and how to align it with the market consistent valuation of Solvency II that adequately prices options and guarantees, therefore not affecting the capital requirements. The way to do it, in EIOPA's view, would be a pure adjustment of eligible own funds which reduces over time.

### **EIOPA's technical advice on Transitional Measures:**

Based on the outlined principles and observations, EIOPA advises to **implement transitional measures as part of the LTG package**. In order to make these measures available for a broader application, EIOPA also advises to **complement the tested measure with a second measure** that is able to address further issues also related to the different valuation of technical provisions under Solvency I versus

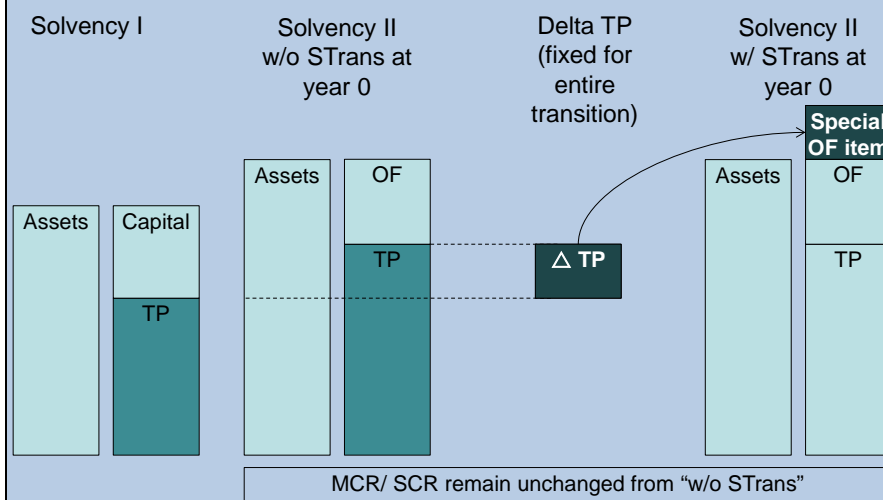


Solvency II. Both approaches follow the principles defined by EIOPA and need to be accompanied by strong supervisory review elements.

The first transitional measure (“dynamic”) is aligned with the tested approach, but it should introduce some amendments to reduce technical complexity and ensure “affordability” for the undertakings. This measure continues to be linked to the difference in SI and SII rates, i.e. provides a dynamic adjustment.

The second transitional measure (“static”) based on a more static assessment of the difference in the SI vs SII Technical Provisions at the date of Solvency II implementation. This difference would then trigger a static adjustment of the SII balance sheet which is run down over time.

This proposal would allow further Member States apply transitional measure for issues linked to the different valuation of liabilities under SI vs SII. The approach is relatively simple, i.e. it does not require the splitting of existing vs new business or paid-in vs new premiums. The drawback of this option is that significant changes in the risk-free rate during the transitional period might result in a too small or too large relief for undertakings. This could be overcome by implementing a regular review of the static adjustment level (e.g. every 24 months).



Please see Section 9.11 for details on this approach and Section 10.2 for an initial impact assessment regarding the two transitional measures proposed.

Finally, the transitional measures should **not represent Member State options and not exclude cross-border business**, but should be applicable in all Member States subject to NSA approval.

## 8. Extension of Recovery Period

### 8.1. Purpose of the measures and highlights of the tested approach

#### *Summary*

The extension of the recovery period (ERP) is the only measure which applies after the SCR has been breached by the undertaking. This is an important distinction to be made especially with regard to the protection of policyholders which will be discussed in a subsequent chapter.

(Re)insurance undertakings are required to comply with their SCR on a continuous basis. Where undertakings observe that their SCR is no longer complied with, undertakings are granted 6 months from the observation of non-compliance to recover the SCR. The supervisory authority may extend that period to a maximum of 9 months (meaning additional 3 months to the 6 months period).

However, in the event of an exceptional fall in financial markets, as determined by EIOPA, an ERP may be granted to the undertaking by the supervisory authority concerned. The question in this assessment is whether the maximum extension can be part of agreement of the long-term guarantee package in case the average duration of the technical provisions exceeds 12 years.

The factors on which EIOPA should base its decision to declare the existence of an exceptional fall in financial markets are also under discussion. But this is not part of the long-term guarantee package and therefore not part of this report.

The ERPs designed to tackle possible pro-cyclical effects of a breach of SCR, such as distressed sales of assets on financial markets. Depending on the final agreement, it may also address the specific nature of long-term guarantees, without distinction between life and non-life activities, insofar as the maximum length of the extension of the period may be linked to, and may be higher for, technical provisions with a higher average duration.

#### *Current legal framework*

The ERP in the event of an exceptional fall in financial markets is not a new mechanism introduced by the draft Omnibus II Directive.

The extension of the recovery period has always been part of the Solvency II Directive, which provides in its Article 138 (4):

*“In the event of an exceptional fall in financial markets, the supervisory authority may extend the period set out in the second subparagraph of paragraph 3<sup>13</sup> by an appropriate period of time taking into account all relevant factors.*

*The insurance or reinsurance undertaking concerned shall, every three months, submit a progress report to its supervisory authority setting out the measures taken and the progress made to re-establish the level of eligible own funds covering the Solvency*

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<sup>13</sup> That is to say, the normal period of 6+3 months.

*Capital Requirement or to reduce the risk profile to ensure compliance with the Solvency Capital Requirement.*

*The extension referred to in the first subparagraph shall be withdrawn where that progress report shows that there was no significant progress in achieving the re-establishment of the level of eligible own funds covering the Solvency Capital Requirement or the reduction of the risk profile to ensure compliance with the Solvency Capital Requirement between the date of the observation of non-compliance of the Solvency Capital Requirement and the date of the submission of the progress report."*

Regarding the maximum ERP, the current framework limits that extension to a period of 21 months on top of the 3+6 months resulting in a maximum of 30 months.

The procedure to trigger the ERP is envisaged as follows:

- The national competent authority concerned shall first request EIOPA to determine whether an exceptional fall in financial markets has occurred;
- Within 4 weeks, EIOPA shall decide on the existence of such an event, basing its decision on external and undertaking-specific factors;
- Where EIOPA determines that an exceptional fall in financial markets has occurred, that determination, together with a statement of the reasons, shall be communicated to each of the supervisory authorities in the Union and made publicly available, unless such publication could seriously jeopardise the orderly functioning and integrity of financial markets or the stability of the whole or part of the financial system of the Union;
- Eventually, EIOPA shall determine when the conditions on which the declaration of the existence of a fall in financial markets are no longer fulfilled, meaning the end of the extension of the recovery period.

The below table shows the combination of external and undertaking-specific factors on which EIOPA is to base its decision regarding the existence of an exceptional fall in financial markets.

|   | External factors  | Undertaking-specific factors   |
|---|---|--|
| 1 | the impact of an extension on financial markets, on the availability of insurance and reinsurance products and on policyholders and beneficiaries   | the impact of an extension on policyholders and beneficiaries  |
| 2 | the number and size of the insurance and reinsurance undertakings affected by the exceptional fall in financial markets and whether the size and nature of those undertakings could, when taken together, have a negative effect on the financial markets | the extent to which the insurance or reinsurance undertaking is affected by the exceptional fall in financial markets                                  |
| 3 | possible pro-cyclical effects of the Solvency Capital Requirement, including distressed sales of assets on financial markets  | the means available to the undertaking to re-establish compliance with the Solvency Capital Requirement and the existence of a realistic recovery plan |
| 6 | the possibility for insurance and reinsurance undertakings to raise additional own funds in financial markets   | the causes and the degree of non-compliance with the Solvency Capital Requirement  |

|    |   |   |
|----|---|---|
| 7  | the availability of an active market for assets held by insurance and reinsurance undertakings and the liquidity of that market                 | the composition of own funds held by the insurance or reinsurance undertaking   |
| 8  | the capacity of the reinsurance market to provide reinsurance or retrocession cover at a reasonable price                                       | the composition of the assets held by the insurance or reinsurance undertaking  |
| 9  | the availability in financial markets of adequate risk mitigation techniques, including financial instruments, at a reasonable price            | the nature and duration of technical provisions and other liabilities of the insurance or reinsurance undertaking                                     |
| 10 | the availability in financial markets of other means to reduce the risk-exposure of insurance and reinsurance undertakings and the cost thereof | when applicable, the availability of financial support from other undertakings of the group to which the insurance or reinsurance undertaking belongs |
| 11 |   | any measures taken by the insurance or reinsurance undertaking to limit the outflow of capital and the deterioration of its solvency position         |

**TABLE 12: EXTERNAL AND UNDERTAKING-SPECIFIC FACTORS FOR ACTIVATING ERP**

### *Changes as part of the LTG package*

The draft Omnibus II text may change the recovery period mechanism in three areas:

- Powers of EIOPA where the potential extension of the recovery period concerns groups: in case of diverging views in the college of supervisors concerned about the extension of the recovery period, EIOPA shall be consulted during one month. If, at the end of this period, no agreement has been reached within the college, EIOPA shall then take the decision about the extension of the recovery period.
- Criteria on which the decision of extension of the recovery period is made: Having received a request from a national supervisory authority, EIOPA shall determine whether an exceptional fall in financial markets exists where:
  - There is a fall in financial markets, and
  - The fall in financial markets has already or is likely to seriously and adversely affect the financial situation of one or more insurance and reinsurance undertakings.
- The maximum extension of the recovery period for undertakings providing long-term guarantees.

As part of this impact assessment, EIOPA is requested to focus its analysis on the third area, the maximum extension of the recovery period.

The Trialogue parties requested EIOPA to assess the impact of setting a maximum extension of the recovery period for insurance undertakings providing long-term guarantees. The exact proposal to be tested includes:

- An eligibility criterion: a 12 years average duration threshold applies to capture only undertakings whose business is mostly of a long-term nature.
- A cap for eligible undertakings: the extension of the recovery period cannot be greater than one-third of the average duration of the technical provisions with a maximum of 7 years.



## 8.2. Impact on policyholder protection

There can be a very positive impact on the protection of policyholder by an ERP as (re)insurance undertakings are not forced into a run-off as a result of exceptional and temporary market conditions (after the expiration of the regular recovery period) even though the SCR breached.

If another measure, for instance the adaptation of the risk-free rate, has already been applied the SCR will be breached later than without the measure. A combination of the ERP with one of the other measures discussed in this paper defers the breach of the SCR. Therefore positive impacts will be available for policyholders for a longer period of time. On the other hand, a combination of the measures might also decrease policyholder protection. The combination of a higher level of own funds, a lower level of SCR and a long recovery period may create a false sense of security for management of undertakings. Meanwhile, solvency problems of the undertaking can accumulate, for up to maximum 7 years, i.e. the risk of delaying necessary measures to restore the solvency level of the undertaking concerned increases if combinations of other LTG measures with the Extension can be used.

To tackle any prejudice that may arise from a combination of measures together with the extension, EIOPA proposes that as soon as the SCR is no longer complied with on the basis of the 'adjusted' coverage ratio, the insurance undertaking is required to take the necessary measures to restore the coverage ratio within the recovery period subject to extension where the conditions are met. Once the LTG package is final, it needs to be reviewed whether solvency levels should be restored including the application of certain LTG measure, or on a non-adjusted basis.

The extension is granted by the NSA concerned, which has to report to EIOPA if an extension is given. Peer reviews are necessary to complement the device in order to prevent inconsistent ERP application across Member States and thus a different treatment of policyholders.

## 8.3. Impact on effective and efficient supervision

### *Assessment of the appropriateness of the Extension of the Recovery period*

The ERP would give undertakings adequate time to resolve most of the excessive volatility impact brought about by assessing solvency. The extension tends thus to minimize the negative impacts of volatility reflected in the Solvency II balance sheet.

From a supervisory point of view, the extension is an important tool which enhances the effectiveness of the supervision insofar as the probability of breaching the SCR increases in times of distressed market conditions. During such adverse events, possible sales of assets may not appear as a timely measure and an ERP should provide a larger window, beneficial to the undertaking concerned and thereby to policyholders.

The ERP itself does not change the balance sheet of the insurer; therefore the supervisory impact of the ERP can be seen as more transparent for the supervisors; and, in addition, the ERP and its duration are required to be disclosed publicly.



The causes of the SCR breach can be manifold. The given fact of an exceptional fall in financial markets is required to be one reason; the other reasons could be much more undertaking-specific. For example the NSA concerned could ask in the recovery plan that those undertaking specific causes have to be remedied in a shorter period of time than the maximum extension granted. This gives more flexibility to the supervisory measures applied available when applying the ERP.

Like the forward looking assessment of the undertaking's own risk (based on ORSA principles, and part of the preparatory guidelines by EIOPA), the ERP will not be a 'tick-the-box' mechanical supervisory tool. The undertaking will be requested to show in detail in its recovery plan how it will assure to meet the capital requirements on a continuous basis in near future.

A lot of weight will be put on the supervisory assessment. Internal and external factors need to be taken into account by the NSA in order to determine the duration of the ERP. Such an assessment is not easily done and needs a lot of resources and expertise by supervisors.

#### *Appropriateness of the maximum length of the Recovery period*

First and foremost, since the Solvency II framework is not yet implemented, any view on the appropriateness of the maximum length of the Extension cannot be supported by experience or external data. It can therefore not be currently judged in a satisfying manner if the maximum duration is appropriately set, if it is one third of the average duration of the liabilities.

#### *Link to an exceptional fall in financial markets*

The ERP can be a very effective and powerful supervisory tool in certain crisis situations. However, the explicit link to an exceptional fall in financial markets would prevent the use of this measure in other types of crises which might affect (re)insurers, e.g. low interest rate environment or a series of large catastrophic events.

## 8.4. Implementation effort

### *For industry*

The effort by industry to ask for an ERP is neither costly, nor does it request other special expertise. As the capital requirements have to be met on a continuous basis under Solvency II, which has to be shown for example in the forward looking assessment of the undertaking's own risk, one cannot argue that the recovery plan has a major impact on the implementation cost of an undertaking. The costs will be equal for users of approved internal models and for users of the standard formula.

### *For NSAs*

The implementation for NSA is expected to be much more cost intensive. To assess the factors which are thought to be undertaking-specific as well the weighting of external factors is partly a new task for NSA. In addition, reporting lines to EIOPA need to be set up. But those implementation costs for NSAs are not directly related to the maximum duration of the extension. Those costs are mainly part of the implementation costs for NSA under Solvency II, so that they can be neglected for this report.



### *For EIOPA*

The same applies for EIOPA. It is among EIOPA's tasks for the implementation of Solvency II to set up reporting lines for its members and to decide on the existence of an exceptional fall in financial markets. The mediation role in colleges proposed in Omnibus II can be covered with existing resources inside EIOPA, as part of its tasks and mediation role in colleges.

## 8.5. Incentives for good risk management

As described above the dialogue between the undertaking and its supervisor will have to increase when the undertaking is asking for an Extension of its Recovery Period. The progress report during that extension will need to be submitted to the NSA every three months, in order for the supervisor to see if significant progress is being made (or that the insurance company has at least taken serious steps in order to recover its SCR).

A clear negative effect on risk management is the fact that the undertaking in breach of the SCR will not face immediate actions from the supervisor when an extension is granted. This could lead to moral hazard of the undertaking concerned. And this moral hazard could be contagious to other firms in that market, too. The SCR could lose its value of being a clear measure of the solvency of one firm which could impact the credibility of that insurer and of that financial market.

For all the above mentioned EIOPA would therefore underline the importance of the undertaking's progress report as a very good incentive for good risk management. We would like to recall that not only raising new capital will help to restore the SCR, but that other measures like derisking of business could serve the same goal.

## 8.6. Impact on financial stability and prevention of systemic risks

An extension of the recovery period can temporarily avoid run-off situations of (re)insurers. Such a run-off situation could lead to contagion risks in the concerned market. Therefore the extension is a good tool to prevent further systemic risks.

EIOPA would like to emphasize that a granted extension is in its nature a more short term supervisory measure. The amendment made in the OMD II discussion refers to the maximum length of that extension. EIOPA expects that NSAs will not make use of that maximum extension in many cases. We expect that NSAs will act cautiously when applying this measure, as it is new to supervisory practice under Solvency II. Therefore the impact on financial stability and prevention of system risks is not major for one market in a financial crisis.

## 8.7. Impact on (re)insurance undertakings' solvency position

There will be no impact on the solvency position or on the balance sheet of insurance or reinsurance undertaking or a group. The solvency position needs to be negative; otherwise this supervisory tool cannot be triggered. EIOPA would like to remind that the capital requirements should be met on a continuous basis and that EIOPA therefore sees the ERP as a measure of last resort.



The ERP might have a negative impact on undertakings, because they determine the SCR measure as no strong line but as a soft target. They are too optimistic about their breach of the SCR and their negative solvency ratio.

The ERP in itself does not improve the balance sheet or the SCR. Those steps have to be taken by the undertaking itself regardless of the maximum length of that extension and they have to show in advance to the NSA concerned the undertaking's recovery plan.

## 8.8. Impact on competition

As the NSA concerned decides on the granting and the duration of the ERP by considering undertaking-specific factors, too, a 'subjective' decision could potentially impact competition. However, a harmonised approach in this respect together with a strong central coordination could overcome this potential issue. NSAs need to report to EIOPA if an ERP was granted. This allows a comparison between different Member States on an aggregated level. Therefore, a high degree of transparency can be achieved if the quality of centrally shared information is sufficiently high.

Furthermore, in case of disagreement between supervisors in a college, EIOPA should mediate as foreseen in the OMD II discussions. This allows for a more transparent setting of ERPs in a group structure. Competition on group level will be better assured in this respect.

Finally, it should be recalled that undertakings have to disclose whether an ERP has been granted. This will result in peer pressure between market participants and help to mitigate the risk of any potential abuse of the measure.

## 8.9. Impact on Long Term Investments

There is no direct impact on long-term Investments from the ERP. But one could assume that an indirect, second level impact will occur: the undertaking has the possibility to hold its assets in long-term investments and is not forced to sell them in case of a breach of the SCR and in a distressed situation. In order to restore its SCR the undertaking can take different measures, i.e. derisking, the effects of which could be seen on a longer time scale than a direct recapitalisation by selling assets. The extension of the recovery period is designed to tackle possible pro-cyclical effects and therefore can serve indirectly Long Term Investments.


## 8.10. Other considerations

*None.*

## 8.11. Main technical findings on the Extension of recovery period

### *Short term exceptional supervisory measure*

EIOPA sees the ERP as an important supervisory tool of last resort in the exceptional case that a (re)insurance undertaking cannot meet its SCR on a continuous basis anymore. It should be noted that it is not a collective and mechanical measure which will be easily applied to numerous insurers in one or several markets as it is bound to



specific conditions which have to be met externally in the market and by the undertaking itself.

The ERP is in its nature to be valued as a short-term supervisory measure, which applies only exceptionally and temporarily to give the insurance undertaking more time in stressed market situations. In its principles and in the spirit of the framework Directive it is not foreseen that the ERP is applied as a long-term supervisory measure. The principle requirement that the SCR has to be met on a continuous basis is not reversed when an ERP is granted. Only more time to take appropriate steps in order to restore its SCR on a longer time horizon than 9 months is granted to the undertaking.

Two major conclusions can be drawn from this underlying principle of the ERP:

- It is of utmost importance that the undertaking presents a realistic recovery plan and that it takes the appropriate steps in order to restore its SCR. Progress has to be shown to the NSA concerned. If that progress is not significant and if the reasons for this are not external the Extension of the Recovery Period can be withdrawn;
- Once the final shape of the LTG package is agreed, there needs to be a close review regarding the potential interaction of different measures to decide where an application of the ERP with other LTG measures is appropriate and where not, i.e. whether undertakings will need to restore the solvency level including or excluding those other measures.

#### *Appropriateness of the maximum duration of the extension*

EIOPA acknowledges that in stressed market conditions the average duration of the liabilities can influence the period needed by an undertaking in order to restore its SCR. In principle EIOPA therefore welcomes that the average duration of liabilities plays an important factor which needs to be weighted appropriately when the duration of the Extension is determined by the NSA concerned.

The proposed length of the extension (i.e. up to 7 years) should be a maximum, anything beyond this does not seem prudent from a supervisory perspective.

#### *Link to an exceptional fall in financial markets*

In the absence of similar supervisory tools for other types of crisis situations, e.g. low interest rate environment or a series of large catastrophic events, it might be useful to extend the current triggering mechanism of the device making it a more efficient tool for supervisors, of course still keeping very strict criteria on the conditions to application and the appropriate length of the extension (which would then most likely also need to link to the type of crisis).

#### *EIOPA's main observations and technical advice on the Extension of the Recovery Period*

##### **EIOPA's main observations on the Extension of the Recovery Period:**

The extension of the recovery period (ERP) can be a powerful tool in crisis periods, showing how time can be used, via management and supervisory action, in the benefit of both policyholders and financial stability. At the same time, to ensure right incentives are embedded, time cannot be seen as an excuse to postpone action by undertakings in

order to restore the situation. As it is the case within Pillar 2 related action, not only capital but other measures can be part of the agreed way forward.

One difference of this measure compared to the CCP, both being designed as crisis tools, is that it can be applied for different types of financial market crises, i.e. not just spread-related crises. However, it should be noted that the current design (steep fall in financial markets) would probably not provide supervisors with the option to apply it in a low interest rate crisis which is one of the key threats to long-term guarantee business.

The proposed length of the extension (i.e. up to 7 years) should be a maximum. And while the duration of liabilities should play a role in activating the measure, the strict and sole link of the granted length of extension to the duration of liabilities seems too simple given the multitude of factors that determines the decision for an application of the measure. Nevertheless, there should be clear conditions linked to the length of application in order to ensure a consistent application across Member States and undertakings.

#### **EIOPA's technical advice on the Extension of the Recovery Period:**

Based on the outlined considerations, EIOPA advises to **implement the Extension of the Recovery Period**, under criteria set by EIOPA. However, the strict and sole link of the length of extension to the duration of liabilities seems too simple given the multitude of factors that determine the decision for the application of the measure. Furthermore, the proposed maximum length of extension needs further review, but should not go beyond the currently proposed 7 years.

EIOPA also advises to consider a broadening of the triggers to the measure which would enable an application in crisis situations that are not directly linked to a steep fall in financial markets, e.g. low interest rate crisis or even a combination of major insurance risk events.

The measure needs to be accompanied by a **supervisory process that closely tracks progress on recovery plans**. And **the interaction with other LTG measures** needs to be clearly defined once the LTG package is final.



## 9. Long-term guarantee package as a whole

### 9.1. Purpose of the package and highlights of the tested approach

Triologue parties agreed that Solvency II should include regulatory measures to deal with the issues associated with long-term guarantees insurance products that may be affected by short term volatility. In this context, short-term volatility is volatility of technical provisions, capital resources (known as own funds) or capital requirements that does not reflect changes in the financial position or risk exposure of insurance or reinsurance undertakings carrying out insurance business of a long-term nature.

The LTG package tested in the context of the Long-Term Guarantees Assessment comprises different elements which are partially applicable for a short or medium term only. The following measures are part of the package:

- Measures only applicable in exceptional financial market circumstances/ crises:
  - Counter-cyclical premium (CCP): national or currency-specific Pillar 1 adjustment to the risk-free rate applicable to all types of insurance business
  - Extension of the recovery period: undertaking-specific Pillar 2 measure granting more time to recover from undercapitalization for undertakings with liabilities > 12 years
- Measure applicable to certain long-term business for a transitional period:
  - Transitional LTG measure: undertaking or portfolio-specific Pillar 1 adjustment to the risk-free rate for certain long-term guarantee products (restricted to 7 years)
- Measures permanently applicable
  - Extrapolation: currency-specific Pillar 1 tool determining the risk-free term structure after the Last Liquid Point
  - “Classical” Matching Adjustment: portfolio-specific Pillar 1 adjustment to the risk-free rate for long-term contracts with matched assets and liabilities, and without policyholder options
  - Extended Matching Adjustment: portfolio-specific Pillar 1 adjustment to the risk-free rate for life contracts and non-life annuities

This chapter is looking at the measures more generally and in combination as the impacts might differ when applying certain measures in combination.

### 9.2. Impact on policyholder protection

#### *Balance sheet stability versus rate adjustments*

The overall aim of the package is to provide more stability to the economic balance sheet of insurers and thus to the European insurance market as a whole by ensuring that Solvency II includes appropriate regulatory measures to deal with issues associated with



long-term guarantee products that may be especially affected by short-term market movements. This is generally supporting policyholder protection.

On the other hand, many participants raised the concern that any measure which increases the discount rate and therefore decreases technical provisions has the potential impact of reducing policyholder protection.

For the most part, the tested LTG measures could result in an increase of the discount rate (apart from the extension of the recovery period), and so there is a clear potential risk to policyholder protection.

### *General safeguards for policyholders*

The risk related to rate adjustments can, however, be mitigated through the use of additional safeguards. One of the key safeguards for this is increased transparency as to the effects of the measures. It is thus foreseen that insurance undertakings will be required to disclose their financial position both with and without the Pillar 1 measures (apart from extrapolation). Even if policyholders might not be in the position to properly interpret the disclosed information, the disclosure will create peer pressure on undertakings not to unduly rely on the measures.

Other measures may include accompanying risk management/ Pillar 2 requirements, a strong supervisory review process, the limitation of the application of certain measures, separate management of liabilities and the appropriate treatment of the measures in the risk-based capital charges.

### *Regarding the tested measures*

Policyholder protection concerns were raised on all measures tested. Concerns were largest for the EMA as this involves very complex company specific calculations (including artificial splits of asset and liability portfolios, application ratio calculations, etc.) which are considered difficult to supervise, i.e. safeguards might not work sufficiently well. For the "classical" MA, concerns were less severe because the approach is much more restricted in terms of assets and liabilities, hence more restricted in terms of risks and also is less complex.

Regarding the CCP, policyholder issues seem less problematic if the measure is applied short-term only. In case of a long-term application, there is the risk that structural issues are addressed in a delayed fashion which would trigger serious policyholder concerns.

For the transitional, major concerns raised could be overcome by a strong supervisory review process. Similarly, Pillar 2 elements (e.g. sensitivity analysis) provide a good balance to the extrapolation approach.

The extension of the recovery period raised less concerns in a standalone application as it is linked to a number of application requirements (including a review of policyholder protection impact). However, in combination with other measures, it could lead to increased risks to policyholders. For example a 'crisis tool' CCP performs a similar function to the extension of the recovery period, and so a CCP which affords significant and long term benefit should not be introduced if there is a very lengthy extension of the recovery period and vice versa.



## 9.3. Impact on effective and efficient supervision

### *Complexity of the package*

The complexity of the tested LTG package is the main driver of concerns with regards to effective and efficient supervision. This complexity is mainly driven by

- The number of LTG measures more generally and the number of measures applicable to one undertaking;
- The possible interaction of different measures and degree of optionality for the undertakings;
- The degree of undertaking specificities influencing the measures;
- Disproportionality of measures or related processes (e.g. two sets of balance sheet and capital requirement calculations for certain risk-free rate adjustments that do not directly reflect the economic reality of the undertaking).

To overcome these issues, the number of measures in the package should be reduced wherever useful and simplifications should be introduced where they do not harm principles of the Solvency II approach.

### *Comparability*

A further issue raised by supervisors is the comparability of undertakings' solvency positions across a market given when risk-free rate adjustments are applied. However, this can largely be overcome by ensuring full transparency of all measures impacting on the economic balance sheet and the solvency position. In respect to the extrapolation of the interest rate term structure, the concrete parameterization would be applied consistently in all Pillar 1 calculations.

### *Intensified supervisory review process*

Some of the measures require a significantly intensified supervisory review process to review the measure application and to prevent risks to policyholder protection. This mainly relates to the "Classical" and Extended Matching Adjustment as well as the Transitional measure.

In both cases, the undertaking-specific nature and the relatively complex technical aspects of the measures trigger this additional effort, e.g. split of old vs new business for the Transitional measure. However, in the case of the "classical" Matching Adjustment and the Transitional, NSAs consider the effort adequate and manageable. And for Member States where mechanisms similar to the Matching Adjustment are already in place, the effort will be less significant.

A more general issue raised for the entire package, was the supervision of segregation of liabilities required within certain LTG measure or across the measures.

More generally, measures that are applicable collectively (market-wide) tend to result in a relatively efficient process for supervisors.

### *Key effectiveness concerns*

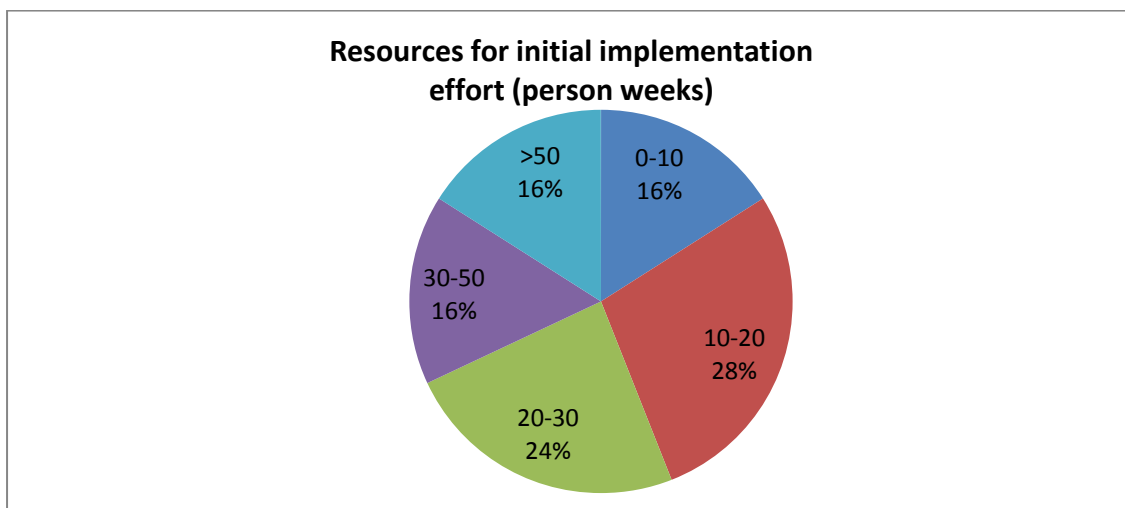
A number of observations were made regarding the limited effectiveness of parts of the LTG package. This mainly related to

- CCP: In the eyes of many participants, the effectiveness is reduced in case (1) the currency option is applied only, (2) the calibration of the CCP risk sub-module is retained at 100%, and (3) a smooth triggering process cannot be assured.
- “Classical” Matching Adjustment and the Transitional: Application was considered to be effective in some member states only (due to difficulties in technical implementation and the scope for application).
- Cross-border business: Concerns were raised due to the fact that a number of the tested measures exclude cross-border business which is a key market element in some Member States (e.g. LI, LU, IE, EE) or market segments (e.g. reinsurance).
- Intervention levels: Different sets of solvency and balance sheet data linked to the rate-adjustment measures raise the question over whether this would eventually result in additional supervisory intervention levels if the solvency limit is breached when not applying LTG measures (while it is not breach when applying it which triggers the “actual” supervisory intervention). The introduction of such additional intervention levels might torpedo the effectiveness of the respective measure.

## 9.4. Implementation effort

### *For industry*

Generally, industry found it difficult to estimate implementation efforts, due to the uncertainty surrounding the final LTG package that will be included in the legislation. Figure 48 provides an aggregated overview of the estimated resources that would be required for initial implementation of the LTG package. Nevertheless, there is a lot of variability around that aggregated picture, as implementation efforts are likely to differ, for example between life and non-life undertakings or between undertakings that are currently performing cash flow matching and those who are not, among other differentiating factors.



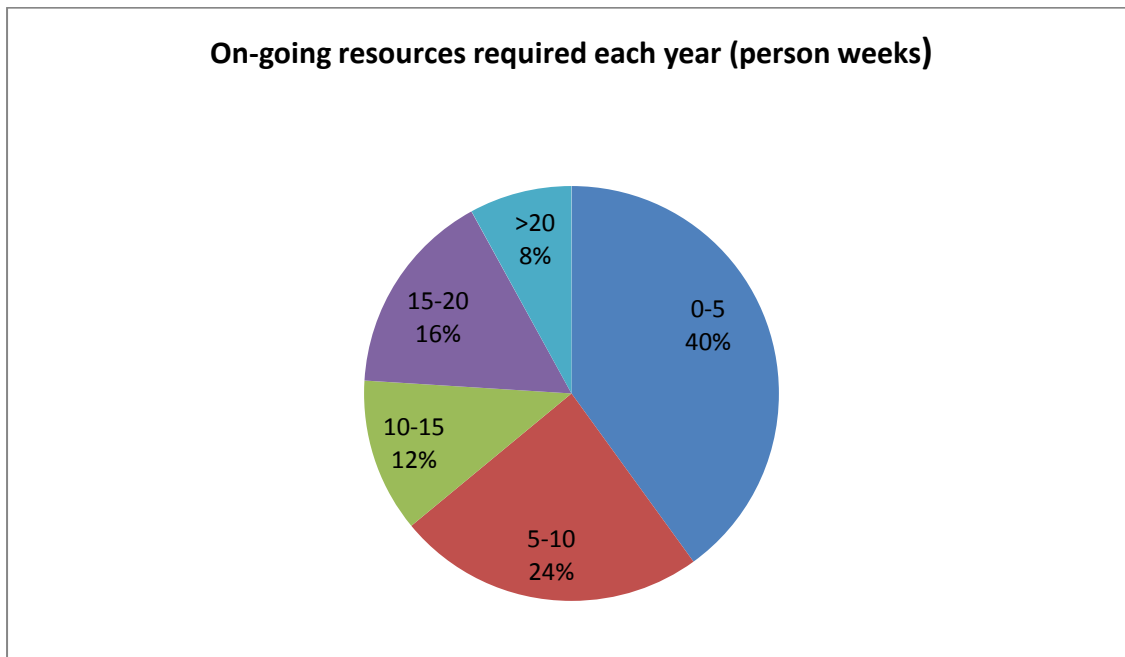
**FIGURE 49: RESOURCES FOR INITIAL IMPLEMENTATION EFFORT (PERSON WEEKS)**

For undertakings belonging to groups, most of the implementation resources would be provided at group level.

Figure 49 provides an aggregated view of the estimated on-going resources to be devoted to the LTG measures, which tend to be lower than the estimated resources for

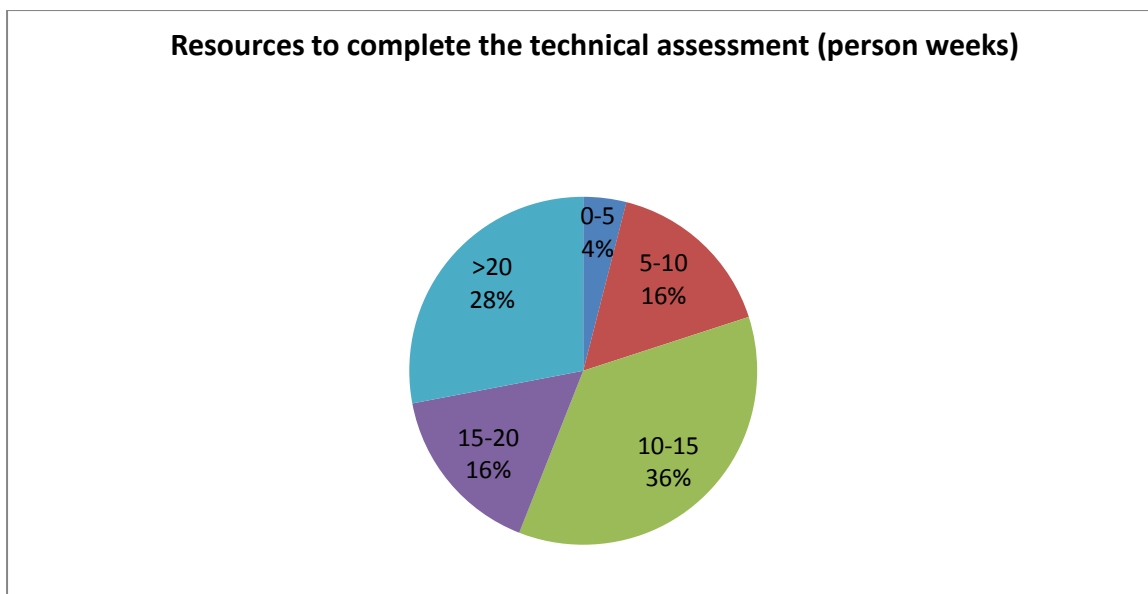


initial implementation. Although there is still a lot of variability, the results are more homogeneous than in the estimation of initial resources.



**FIGURE 50: ON-GOING RESOURCES REQUIRED PER YEAR (PERSON WEEKS)**

Finally, Figure 50 provides an overview of the resources dedicated by undertakings to complete the LTGA. It shows that almost 80% of participating undertakings used more than 1 full time resource working on the assessment throughout the entire 9 weeks.



**FIGURE 51: RESOURCES TO COMPLETE THE LTGA (PERSON WEEKS)**

Matching Adjustment and Transitional were the measures where undertakings saw the highest implementation efforts. Again, this is linked to the undertaking-specific nature of the measures and some more complex technical processes.

More generally, relating to all rate-adjusting measures, a key driver to the implementation effort is the number of risk-free rate curves applied within an undertaking.



### *For NSA*

NSAs tend to consider that the implementation of the LTG package will require considerable time and resources, although these may not be so material when compared to the overall implementation costs of Solvency II. The most quoted foreseen challenges include the training effort to be performed in order to be able to supervise the LTG measures, which would be significant due to the variety of methods to calculate the technical provisions as well as the higher number of resources to be devoted to approve the measures where required, monitor them and review them on and off-site.

This also links to the intensified supervisory review process for some measure as indicated in section 9.3.

### *For EIOPA*

EIOPA sees main implementation efforts related to the issuance of guidelines and to any centrally coordinated crisis measures, i.e. CCP or ERP. In both cases, EIOPA is intended to play a strong role in managing (currency area CCP) or coordinating activities (national CCP, ERP). These tools also require a constant observation of the macroeconomic situation, but this is a key element of EIOPA's financial stability role and is therefore not seen as additional effort linked to the LTG package implementation.

Furthermore, the determination of the risk-free term structure for a number of currencies is done on a regular basis by EIOPA providing this information to all European markets. However, this effort is required anyway and as such not dependent on the concrete design of the determination of the interest rate term structures.

## 9.5. Incentives for good risk management

The major risk management concern to the LTG package relates to the deviation from the risk-free rate when applying adjustments to it. The further the adjusted curve is away from economic reality, the more distortions can be created between Pillar 1 and risk management processes of the undertakings, e.g. hedging, valuation of options and guarantees. This also raised issues with regard to the ORSA and to internal model users.

A key concern with regards to risk management incentives relates to wrong incentives that LTG measures might give in terms of asset quality. With regards to asset quality, this issue mainly exists for the MA as it is directly linked to the asset portfolio of undertakings. In the case of the "classical" MA, the issue is mostly overcome by the limits implemented in relation to asset quality: (1) MA is limited to investment grade assets, (2) the amount of BBB assets in the portfolio should not exceed 33% (excluding government bonds), and (3) limiting the amount of MA applicable to BBB assets. However, for the alternative EMA, those types of limits do not exist which incentivises the holding of low quality high spread instruments.

Measures linked to a representative portfolio as in the CCP, generally create a less direct incentive for undertakings to invest in certain assets. However, in case the representative portfolio is national specific, there might be a quite strong incentive for undertakings to increase the portion of "home" government bonds when those are distressed.



## 9.6. Impact on financial stability and prevention of systemic risks

Several potential threats to financial stability have been raised by participants of the assessment, most notably

- Potential cliff edge effects relating to a binary on/ off switching of measures, e.g. for CCP or for the Matching Adjustment (when asset quality criteria are breached for a certain time).
- Declaration of a crisis situation and potential contagion effects relating from such a declaration, especially if the crisis is related to government bond spreads.
- General uncertainty of the market on “real” SII positions (given the rate-adjustments) might undermine the stability of the industry – full disclosure of the measure effects will largely overcome this issue;
- Potential systemic underestimation of TP and as a consequence undercapitalisation of the insurance market would also harm the stability of the insurance market – again, full disclosure of measure effects will help;
- Risk of market fragmentation due to national solutions (e.g. national reference portfolios);
- Harming the role of insurers as long-term investors might affect financial stability in a broader sense;
- Herding effects, e.g. collective hedging of the LLP, might have an impact on financial markets.

For all tested Pillar 1 measures, financial stability issues have been identified. For the “classical” MA, the impact of fully removing the MA benefit in case of a breach in the credit quality limits represents a high risk of cliff edge effect, especially in current times. Supervisors should be provided with mitigating measures in their tool box to limit the impact of such issues. Furthermore, EIOPA considers that for the CCP, the concern around the contagion effect of a triggering announcement cannot be overcome.

## 9.7. Impact on (re)insurance undertakings' solvency position

### 9.7.1. All undertakings

The tables in this section contain the average results provided by undertakings that participated in the LTGA. It should be noted that the sample size and composition per scenario can be very different and results might therefore not always be representative. Therefore, the comparison between some scenarios and between Member States might not be fully appropriate. Also, it is important to note again, that all capital requirement calculations were done using the Standard Formula only, i.e. not providing the most fair view on some markets.



| Number of undertakings in the sample          |                  | 427             | 417               | 359                    | 376                | 79                      | 318                    | 220                     | 89                     | 218          | 64                        | 254                  | 155            | 225 |
|---|------------------|-----------------|-------------------|------------------------|--------------------|-------------------------|------------------------|-------------------------|------------------------|--------------|---------------------------|----------------------|----------------|-----|
| Assets  | Solvency I       | Scenario 1      | Scenario 2        | Scenario 3             | Scenario 4         | Scenario 5              | Scenario 6             | Scenario 7              | Scenario 8             | Scenario 9   | Scenario 10               | Scenario 11          | Scenario 12    |     |
|   | Baseline w/ LTGP | Lower CCP (50%) | Higher CCP (250%) | Alternative classic MA | Longer convergence | Extended MA Alternative | Extended MA Standard 2 | Transitional s existing | Transitional s paid-in | end 2009     | end 2004 + Transitional s | end 2004, classic MA |                |     |
| Reinsurance                                   | 155,6            | 128,5           | 127,8             | 123,0                  | 78,6               | 118,6                   | 107,1                  | 77,5                    | 105,1                  | 78,3         | 105,8                     | 86,6                 | 106,0          |     |
| Investments                                   | 3.370,9          | 3.369,8         | 3.260,9           | 3.287,3                | 789,8              | 3.009,5                 | 2.558,5                | 734,2                   | 2.233,3                | 551,5        | 2.839,5                   | 1.370,3              | 2.809,5        |     |
| Unit linked investments                       | 680,0            | 656,6           | 646,4             | 646,7                  | 292,7              | 582,6                   | 563,6                  | 294,3                   | 505,7                  | 256,3        | 579,7                     | 386,9                | 557,2          |     |
| Other   | 594,1            | 630,3           | 597,6             | 598,7                  | 157,6              | 552,2                   | 515,9                  | 166,8                   | 530,3                  | 103,7        | 474,2                     | 315,7                | 471,8          |     |
| <b>Total assets</b>                           | <b>4.800,5</b>   | <b>4.785,3</b>  | <b>4.632,7</b>    | <b>4.655,8</b>         | <b>1.318,6</b>     | <b>4.262,9</b>          | <b>3.745,2</b>         | <b>1.272,9</b>          | <b>3.374,4</b>         | <b>989,7</b> | <b>3.999,3</b>            | <b>2.159,4</b>       | <b>3.944,5</b> |     |
| Liabilities                                   | Solvency I       | Scenario 1      | Scenario 2        | Scenario 3             | Scenario 4         | Scenario 5              | Scenario 6             | Scenario 7              | Scenario 8             | Scenario 9   | Scenario 10               | Scenario 11          | Scenario 12    |     |
|   | Baseline w/ LTGP | Lower CCP (50%) | Higher CCP (250%) | Alternative classic MA | Longer convergence | Extended MA Alternative | Extended MA Standard 2 | Transitional s existing | Transitional s paid-in | end 2009     | end 2004 + Transitional s | end 2004, classic MA |                |     |
| St: BE: St: insurance liabilities             | 4.054,6          | 3.807,1         | 3.747,6           | 3.591,9                | 1.056,4            | 3.421,4                 | 3.099,3                | 1.023,5                 | 2.818,8                | 810,7        | 3.075,6                   | 1.760,1              | 3.067,5        |     |
| LTG measures applied                          |                  |                 |                   |                        |                    |                         |                        |                         |                        |              |                           |                      |                |     |
| MA: Classic                                   |                  | 5,4%            | 5,4%              | 5,7%                   | 20,3%              | 5,3%                    | 4,8%                   | 16,8%                   | 6,7%                   | 18,8%        | 5,6%                      | 8,7%                 | 5,3%           |     |
| MA: Extended                                  |                  | 2,4%            | 2,5%              | 2,6%                   | 7,9%               | 2,7%                    | 62,0%                  | 9,0%                    |                        |              | 2,7%                      |                      | 2,9%           |     |
| Transitional                                  |                  |                 |                   |                        |                    |                         |                        |                         | 56,0%                  | 38,9%        |                           | 52,4%                |                |     |
| CCP   |                  | 71,5%           | 75,4%             | 72,0%                  | 62,4%              | 73,0%                   | 13,8%                  | 58,0%                   | 9,6%                   | 23,6%        | 73,4%                     |                      |                |     |
| None of the LTG measures / not reported       |                  | 20,7%           | 16,7%             | 19,8%                  | 9,4%               | 19,0%                   | 19,3%                  | 16,3%                   | 27,7%                  | 18,7%        | 18,3%                     | 38,9%                | 91,8%          |     |
| Risk margin                                   |                  | 96,1            | 92,9              | 93,0                   | 32,6               | 85,4                    | 68,4                   | 27,5                    | 63,0                   | 20,9         | 76,9                      | 40,5                 | 73,9           |     |
| Other   | 745,9            | 421,4           | 400,9             | 432,2                  | 117,5              | 375,0                   | 312,7                  | 123,2                   | 282,2                  | 88,3         | 393,0                     | 187,8                | 377,0          |     |
| <b>Total liabilities</b>                      | <b>4.800,5</b>   | <b>4.324,6</b>  | <b>4.241,5</b>    | <b>4.117,1</b>         | <b>1.206,5</b>     | <b>3.881,8</b>          | <b>3.480,5</b>         | <b>1.174,2</b>          | <b>3.164,0</b>         | <b>919,9</b> | <b>3.545,6</b>            | <b>1.988,4</b>       | <b>3.518,5</b> |     |
| <b>Excess of Assets over Liabilities</b>      |                  | <b>460,6</b>    | <b>391,2</b>      | <b>538,7</b>           | <b>112,2</b>       | <b>381,1</b>            | <b>264,8</b>           | <b>98,7</b>             | <b>210,4</b>           | <b>69,9</b>  | <b>453,7</b>              | <b>171,0</b>         | <b>426,0</b>   |     |
| <b>StI: SCR ; StI: Required Solvency Marg</b> | 165,8            | 341,4           | 325,6             | 376,4                  | 91,1               | 299,2                   | 215,7                  | 81,9                    | 227,2                  | 66,7         | 259,2                     | 158,1                | 239,6          |     |
| Surplus                                       | 235,7            | 147,7           | 92,2              | 192,0                  | 23,8               | 107,7                   | 69,6                   | 19,8                    | -26,4                  | 4,0          | 220,9                     | 12,4                 | 210,9          |     |
| Solvency ratio                                | 242,1%           | 143,3%          | 128,3%            | 151,0%                 | 126,2%             | 136,0%                  | 132,3%                 | 124,1%                  | 88,4%                  | 105,9%       | 185,2%                    | 107,8%               | 188,0%         |     |
| <b>Minimum Capital Requirement</b>            |                  | 110             | 108               | 112                    | 27                 | 93                      | 72                     | 30                      | 75                     | 20           | 83                        | 52                   | 78             |     |
| Surplus                                       |                  | 355             | 283               | 436                    | 81                 | 293                     | 195                    | 65                      | 100                    | 44           | 379                       | 107                  | 355            |     |
| Solvency ratio                                |                  | 422,7%          | 363,1%            | 488,0%                 | 397,6%             | 414,4%                  | 372,2%                 | 314,7%                  | 233,3%                 | 320,5%       | 559,1%                    | 307,0%               | 553,3%         |     |

TABLE 13: SUMMARISED B/S OF YE11 SCENARIOS

Overall, it seems that the scenarios involving the default CCP levels of 100 respectively 250 basis points in combination with the “classical” MA (the standard EMA versions have not been applied very broadly) and a 20+10 years extrapolation approach have the highest positive impact on solvency positions of participating undertakings, i.e. scenarios 1 and 3. When looking at Member States level, this picture is not consistent though.

| SCR Ratios       | Scenario 1       | Scenario 2      | Scenario 3        | Scenario 4             | Scenario 5         | Scenario 6              | Scenario 7             | Scenario 8              | Scenario 9             | Scenario 10   | Scenario 11               | Scenario 12          |
|------------------|------------------|-----------------|-------------------|------------------------|--------------------|-------------------------|------------------------|-------------------------|------------------------|---------------|---------------------------|----------------------|
|                  | Baseline w/ LTGP | Lower CCP (50%) | Higher CCP (250%) | Alternative classic MA | Longer convergence | Extended MA Alternative | Extended MA Standard 2 | Transitional s existing | Transitional s paid-in | end 2009      | end 2004 + Transitional s | end 2004, classic MA |
| Weighted average | 143% [417 UT]    | 128% [359 UT]   | 151% [376 UT]     | 126% [79 UT]           | 136% [318 UT]      | 132% [220 UT]           | 124% [89 UT]           | 88% [218 UT]            | 106% [64 UT]           | 185% [254 UT] | 108% [155 UT]             | 188% [225 UT]        |
| Austria          | 186% [22 UT]     | 171% [22 UT]    | 208% [22 UT]      |                        | 186% [20 UT]       | 204% [5 UT]             |                        | 108% [9 UT]             |                        | 215% [6 UT]   | 149% [3 UT]               | 186% [6 UT]          |
| Belgium          | 105% [8 UT]      | 98% [8 UT]      | 103% [7 UT]       |                        | 104% [7 UT]        |                         |                        |                         |                        | 180% [6 UT]   |                           | 232% [6 UT]          |
| Bulgaria         | 247% [3 UT]      | 245% [3 UT]     | 231% [3 UT]       |                        |                    |                         |                        |                         |                        |               |                           |                      |
| Cyprus           | 158% [15 UT]     | 157% [14 UT]    | 158% [14 UT]      | 211% [3 UT]            | 206% [5 UT]        | 226% [5 UT]             | 211% [3 UT]            | 297% [5 UT]             |                        | 206% [11 UT]  | 192% [11 UT]              | 277% [7 UT]          |
| Germany          | 155% [98 UT]     | 129% [57 UT]    | 164% [69 UT]      |                        | 120% [55 UT]       | 89% [54 UT]             | 150% [8 UT]            | 153% [58 UT]            |                        | 208% [30 UT]  | 114% [21 UT]              | 203% [28 UT]         |
| Denmark          | 289% [11 UT]     | 244% [11 UT]    | 291% [11 UT]      | 249% [7 UT]            | 277% [11 UT]       | 249% [8 UT]             | 350% [6 UT]            |                         |                        |               |                           |                      |
| Estonia          | 314% [3 UT]      | 293% [3 UT]     | 279% [3 UT]       |                        | 291% [3 UT]        |                         |                        |                         |                        |               |                           |                      |
| Spain            | 136% [24 UT]     | 126% [21 UT]    | 141% [21 UT]      | 134% [18 UT]           | 129% [20 UT]       | 150% [20 UT]            | 131% [18 UT]           | 113% [16 UT]            | 110% [9 UT]            | 192% [18 UT]  | 224% [12 UT]              | 218% [17 UT]         |
| Finland          | 146% [7 UT]      | 134% [7 UT]     | 159% [7 UT]       | 159% [7 UT]            | 146% [7 UT]        | 160% [6 UT]             | 146% [6 UT]            | 148% [6 UT]             | 148% [5 UT]            | 215% [6 UT]   | 145% [6 UT]               | 166% [5 UT]          |
| France           | 144% [31 UT]     | 127% [31 UT]    | 155% [31 UT]      |                        | 141% [30 UT]       | 160% [20 UT]            |                        | 1% [16 UT]              |                        | 190% [31 UT]  | 24% [14 UT]               | 206% [28 UT]         |
| Greece           | -5% [13 UT]      | -18% [13 UT]    | 22% [13 UT]       |                        | -56% [5 UT]        | -11% [8 UT]             |                        | 9% [6 UT]               |                        | 112% [6 UT]   | 110% [5 UT]               | 107% [5 UT]          |
| Hungary          | 192% [13 UT]     | 70% [4 UT]      | 189% [13 UT]      |                        | 192% [12 UT]       |                         |                        | -27% [3 UT]             |                        | 200% [4 UT]   |                           | 175% [4 UT]          |
| Ireland          | 57% [5 UT]       | 49% [5 UT]      | 74% [5 UT]        |                        | 57% [5 UT]         |                         |                        |                         |                        | 70% [5 UT]    |                           | 92% [5 UT]           |
| Italy            | 132% [17 UT]     | 121% [17 UT]    | 138% [17 UT]      | 82% [3 UT]             | 155% [9 UT]        | 182% [17 UT]            | 91% [4 UT]             | 23% [16 UT]             | 116% [3 UT]            | 238% [16 UT]  | 191% [4 UT]               | 265% [16 UT]         |
| Lichtenstein     | 141% [16 UT]     | 140% [6 UT]     |                   |                        |                    |                         |                        |                         |                        |               |                           |                      |
| Lithuania        | 229% [4 UT]      | 230% [3 UT]     | 205% [4 UT]       |                        | 217% [3 UT]        |                         |                        |                         |                        | 221% [3 UT]   |                           | 245% [3 UT]          |
| Luxembourg       | 154% [6 UT]      | 132% [5 UT]     | 176% [6 UT]       | 139% [3 UT]            | 144% [5 UT]        | 153% [5 UT]             | 139% [4 UT]            |                         |                        |               |                           |                      |
| Malta            | 206% [3 UT]      | 219% [3 UT]     | 174% [3 UT]       |                        |                    |                         |                        |                         |                        | 205% [3 UT]   |                           | 201% [3 UT]          |
| Netherlands      | 143% [14 UT]     | 132% [14 UT]    | 140% [14 UT]      | 134% [7 UT]            | 134% [13 UT]       | 138% [9 UT]             | 133% [10 UT]           | 127% [5 UT]             |                        | 195% [11 UT]  | 178% [6 UT]               | 191% [11 UT]         |
| Norway           | 140% [4 UT]      | 113% [4 UT]     | 174% [4 UT]       |                        | 126% [3 UT]        |                         |                        |                         |                        | 144% [4 UT]   |                           | 116% [4 UT]          |
| Poland           | 310% [35 UT]     | 304% [35 UT]    | 316% [35 UT]      | 376% [12 UT]           | 315% [33 UT]       | 356% [19 UT]            | 366% [13 UT]           | 247% [24 UT]            | 144% [19 UT]           | 308% [35 UT]  | 223% [32 UT]              | 326% [25 UT]         |
| Portugal         | 65% [28 UT]      | 54% [27 UT]     | 81% [28 UT]       |                        | 63% [26 UT]        | 146% [14 UT]            |                        | 46% [17 UT]             | 40% [9 UT]             | 145% [24 UT]  | 128% [18 UT]              | 154% [23 UT]         |
| Romania          | 141% [4 UT]      | 141% [4 UT]     | 144% [4 UT]       | 240% [3 UT]            | 145% [4 UT]        | 236% [3 UT]             | 238% [3 UT]            | 221% [3 UT]             |                        | 121% [4 UT]   |                           |                      |
| Sweden           | 186% [15 UT]     | 176% [15 UT]    | 202% [15 UT]      |                        | 173% [15 UT]       | 132% [3 UT]             |                        | 212% [6 UT]             |                        | 220% [12 UT]  | 355% [3 UT]               | 192% [12 UT]         |
| Slovenia         | 156% [14 UT]     | 148% [14 UT]    | 146% [14 UT]      |                        | 157% [14 UT]       |                         |                        | 161% [4 UT]             |                        | 200% [3 UT]   |                           | 195% [3 UT]          |
| Slovakia         | 256% [11 UT]     | 243% [11 UT]    | 260% [11 UT]      |                        | 273% [9 UT]        | 254% [5 UT]             |                        |                         |                        |               |                           |                      |
| United Kingdom   | 90% [13 UT]      | 84% [12 UT]     | 96% [12 UT]       | 93% [11 UT]            | 89% [10 UT]        | 77% [9 UT]              | 77% [6 UT]             | 94% [12 UT]             | 94% [8 UT]             | 99% [13 UT]   | 91% [10 UT]               | 110% [12 UT]         |

TABLE 14: OVERVIEW OF SCR IMPACT OF ALL SCENARIOS ON DIFFERENT COUNTRIES

In some Member States, the application of the Alternative EMA tested in scenario 6 has shown to have the highest SCR ratio impact (in combination with the CCP and the 20+10 years extrapolation approach), e.g. BE, ES, FI, FR, IT, LT, PL, SI. And in others, the transitional scenario 8 was the most supportive in terms of impact, e.g. CY, DK, EE, IE.

However, it should be noted that the comparison is better made with the “real” CCP value impacts as provided in section 3.7.1, i.e. especially for Member States with high CCP values at YE11 the picture is then usually changing towards the CCP application having the highest SCR ratio impact.



| MCR Ratios       | Scenario 1       | Scenario 2      | Scenario 3        | Scenario 4             | Scenario 5         | Scenario 6              | Scenario 7             | Scenario 8             | Scenario 9            | Scenario 10   | Scenario 11              | Scenario 12          |
|------------------|------------------|-----------------|-------------------|------------------------|--------------------|-------------------------|------------------------|------------------------|-----------------------|---------------|--------------------------|----------------------|
|                  | Baseline w/ LTGP | Lower CCP (50%) | Higher CCP (250%) | Alternative classic MA | Longer convergence | Extended MA Alternative | Extended MA Standard 2 | Transitionals existing | Transitionals paid-in | end 2009      | end 2004 + Transitionals | end 2004, classic MA |
| Weighted average | 423% [417 UT]    | 363% [359 UT]   | 488% [376 UT]     | 398% [79 UT]           | 414% [318 UT]      | 372% [220 UT]           | 315% [89 UT]           | 233% [218 UT]          | 321% [64 UT]          | 559% [254 UT] | 307% [155 UT]            | 553% [225 UT]        |
| Austria          | 664% [22 UT]     | 598% [22 UT]    | 760% [22 UT]      |                        | 670% [20 UT]       | 650% [5 UT]             |                        | 368% [9 UT]            |                       | 729% [6 UT]   | 508% [3 UT]              | 624% [6 UT]          |
| Belgium          | 242% [8 UT]      | 205% [8 UT]     | 341% [7 UT]       |                        | 238% [7 UT]        | 315% [5 UT]             |                        |                        |                       | 422% [6 UT]   |                          | 510% [6 UT]          |
| Bulgaria         | 545% [3 UT]      | 495% [3 UT]     | 715% [3 UT]       |                        |                    |                         |                        |                        |                       |               |                          |                      |
| Cyprus           | 537% [15 UT]     | 515% [14 UT]    | 554% [14 UT]      | 668% [3 UT]            | 701% [5 UT]        | 744% [5 UT]             | 668% [3 UT]            | 955% [5 UT]            |                       | 665% [11 UT]  | 655% [11 UT]             | 740% [7 UT]          |
| Germany          | 437% [98 UT]     | 338% [57 UT]    | 500% [69 UT]      |                        | 377% [55 UT]       | 243% [54 UT]            | 426% [8 UT]            | 394% [58 UT]           |                       | 541% [30 UT]  | 296% [21 UT]             | 496% [28 UT]         |
| Denmark          | 776% [11 UT]     | 639% [11 UT]    | 843% [11 UT]      | 599% [7 UT]            | 750% [11 UT]       | 552% [8 UT]             | 917% [6 UT]            |                        |                       |               |                          |                      |
| Estonia          | 910% [3 UT]      | 863% [3 UT]     | 884% [3 UT]       |                        | 883% [3 UT]        |                         |                        |                        |                       |               |                          |                      |
| Spain            | 334% [24 UT]     | 299% [21 UT]    | 372% [21 UT]      | 324% [18 UT]           | 314% [20 UT]       | 389% [20 UT]            | 317% [18 UT]           | 269% [16 UT]           | 243% [9 UT]           | 488% [18 UT]  | 501% [12 UT]             | 543% [17 UT]         |
| Finland          | 520% [7 UT]      | 476% [7 UT]     | 596% [7 UT]       | 575% [5 UT]            | 521% [7 UT]        | 580% [6 UT]             | 539% [6 UT]            | 549% [6 UT]            | 539% [5 UT]           | 779% [6 UT]   | 527% [6 UT]              | 594% [5 UT]          |
| France           | 395% [31 UT]     | 341% [31 UT]    | 473% [31 UT]      |                        | 388% [30 UT]       | 416% [20 UT]            |                        | -50% [16 UT]           |                       | 534% [31 UT]  | 32% [14 UT]              | 565% [28 UT]         |
| Greece           | -41% [13 UT]     | -89% [13 UT]    | 55% [13 UT]       |                        | -224% [5 UT]       | -68% [8 UT]             |                        | 3% [6 UT]              |                       | 363% [6 UT]   | 360% [5 UT]              | 352% [5 UT]          |
| Hungary          | 574% [13 UT]     | 205% [4 UT]     | 637% [13 UT]      |                        | 629% [12 UT]       |                         |                        | -130% [3 UT]           |                       | 569% [4 UT]   |                          | 515% [4 UT]          |
| Ireland          | 176% [5 UT]      | 145% [5 UT]     | 247% [5 UT]       |                        | 176% [5 UT]        |                         |                        |                        |                       | 222% [5 UT]   |                          | 282% [5 UT]          |
| Italy            | 328% [17 UT]     | 279% [17 UT]    | 392% [17 UT]      | 101% [3 UT]            | 398% [9 UT]        | 468% [17 UT]            | 143% [4 UT]            | 13% [16 UT]            | 340% [3 UT]           | 649% [16 UT]  | 465% [4 UT]              | 709% [16 UT]         |
| Lichtenstein     | 351% [6 UT]      | 346% [6 UT]     |                   |                        |                    |                         |                        |                        |                       |               |                          |                      |
| Lithuania        | 592% [4 UT]      | 519% [3 UT]     | 620% [4 UT]       |                        | 513% [3 UT]        |                         |                        |                        |                       | 563% [3 UT]   |                          | 586% [3 UT]          |
| Luxemburg        | 375% [6 UT]      | 310% [5 UT]     | 470% [6 UT]       | 327% [3 UT]            | 350% [5 UT]        | 369% [5 UT]             | 57% [4 UT]             |                        |                       |               |                          |                      |
| Malta            | 612% [3 UT]      | 541% [3 UT]     | 574% [3 UT]       |                        |                    |                         |                        |                        |                       | 621% [3 UT]   |                          | 472% [3 UT]          |
| Netherlands      | 428% [14 UT]     | 342% [14 UT]    | 490% [14 UT]      | 401% [7 UT]            | 412% [13 UT]       | 373% [9 UT]             | 391% [10 UT]           | 354% [5 UT]            |                       | 652% [11 UT]  | 576% [6 UT]              | 590% [11 UT]         |
| Norway           | 371% [4 UT]      | 288% [4 UT]     | 468% [4 UT]       |                        | 338% [3 UT]        |                         |                        | 376% [4 UT]            |                       |               |                          | 303% [4 UT]          |
| Poland           | 1134% [35 UT]    | 1113% [35 UT]   | 1160% [35 UT]     | 1406% [12 UT]          | 1153% [33 UT]      | 1305% [19 UT]           | 1367% [13 UT]          | 857% [24 UT]           | 433% [19 UT]          | 1127% [35 UT] | 792% [32 UT]             | 1208% [25 UT]        |
| Portugal         | 144% [28 UT]     | 109% [27 UT]    | 232% [28 UT]      |                        | 136% [26 UT]       | 356% [14 UT]            |                        | 83% [17 UT]            | 66% [9 UT]            | 439% [24 UT]  | 379% [18 UT]             | 457% [23 UT]         |
| Romania          | 403% [4 UT]      | 404% [4 UT]     | 412% [4 UT]       | 610% [3 UT]            | 414% [4 UT]        | 611% [3 UT]             | 606% [3 UT]            | 563% [3 UT]            |                       | 360% [4 UT]   |                          |                      |
| Sweden           | 706% [15 UT]     | 667% [15 UT]    | 777% [15 UT]      |                        | 662% [15 UT]       | 507% [3 UT]             |                        | 821% [6 UT]            |                       | 863% [12 UT]  | 1399% [3 UT]             | 753% [12 UT]         |
| Slovenia         | 467% [4 UT]      | 428% [4 UT]     | 507% [4 UT]       |                        | 473% [4 UT]        |                         |                        | 469% [4 UT]            |                       | 606% [3 UT]   |                          | 576% [3 UT]          |
| Slovakia         | 807% [11 UT]     | 773% [11 UT]    | 876% [11 UT]      |                        | 790% [9 UT]        | 742% [5 UT]             |                        |                        |                       |               |                          |                      |
| United Kingdom   | 319% [13 UT]     | 292% [12 UT]    | 349% [12 UT]      | 326% [11 UT]           | 319% [10 UT]       | 270% [9 UT]             | 264% [6 UT]            | 330% [12 UT]           | 324% [8 UT]           | 349% [13 UT]  | 316% [10 UT]             | 398% [12 UT]         |

TABLE 15: OVERVIEW OF MCR IMPACT OF ALL SCENARIOS ON DIFFERENT COUNTRIES

Table 15 also shows that for all Member States with only one exception on an average, none of the tested scenarios 1-7 result in an MCR below 100%. This is not the case for the transitional scenarios 8-9 as these partially had a considerable negative impact on some Member States.

### Comparison across reference dates

| Number of undertakings in the sample | 417                             | 254                     | 225                     | SCR ratios                      |                         |                         | MCR ratios                      |                         |                         |
|--------------------------------------|---------------------------------|-------------------------|-------------------------|---------------------------------|-------------------------|-------------------------|---------------------------------|-------------------------|-------------------------|
|                                      | Scenario 1<br>Baseline end 2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 | Scenario 1<br>Baseline end 2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 | Scenario 1<br>Baseline end 2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 |
| <b>Assets</b>                        |                                 |                         |                         |                                 |                         |                         |                                 |                         |                         |
| Reinsurance                          | 128,5                           | 105,8                   | 106,0                   | 143% [417 UT]                   | 185% [254 UT]           | 188% [225 UT]           | 423% [417 UT]                   | 559% [254 UT]           | 553% [225 UT]           |
| Investments                          | 3.369,8                         | 2.839,5                 | 2.809,5                 | 186% [22 UT]                    | 215% [6 UT]             | 186% [6 UT]             | 664% [22 UT]                    | 729% [6 UT]             | 624% [6 UT]             |
| Unit linked investments              | 656,6                           | 579,7                   | 557,2                   | 105% [8 UT]                     | 180% [6 UT]             | 232% [6 UT]             | 242% [8 UT]                     | 422% [6 UT]             | 510% [6 UT]             |
| Other                                | 630,3                           | 474,2                   | 471,8                   | 247% [3 UT]                     |                         |                         | 545% [3 UT]                     |                         |                         |
| <b>Total assets</b>                  | <b>4.785,3</b>                  | <b>3.999,3</b>          | <b>3.944,5</b>          |                                 |                         |                         |                                 |                         |                         |
| <b>Liabilities</b>                   |                                 |                         |                         |                                 |                         |                         |                                 |                         |                         |
| St. BE; St. insurance liabilities    | 3.807,1                         | 3.075,6                 | 3.067,5                 | 158% [15 UT]                    | 206% [11 UT]            | 277% [7 UT]             | 537% [15 UT]                    | 665% [11 UT]            | 740% [7 UT]             |
| LTG measures applied                 |                                 |                         |                         | 155% [98 UT]                    | 208% [30 UT]            | 203% [28 UT]            | 437% [98 UT]                    | 541% [30 UT]            | 496% [28 UT]            |
| MA: Classic                          | 5,4%                            | 5,6%                    | 5,3%                    | 289% [11 UT]                    |                         |                         | 776% [11 UT]                    |                         |                         |
| MA: Extended                         | 2,4%                            | 2,7%                    | 2,9%                    | 314% [3 UT]                     |                         |                         | 910% [3 UT]                     |                         |                         |
| Transitional                         |                                 |                         |                         | 136% [24 UT]                    | 192% [18 UT]            | 218% [17 UT]            | 334% [24 UT]                    | 488% [18 UT]            | 543% [17 UT]            |
| CCP                                  | 71,5%                           | 73,4%                   |                         | 146% [7 UT]                     | 215% [6 UT]             | 166% [5 UT]             | 520% [7 UT]                     | 779% [6 UT]             | 594% [5 UT]             |
| None / not reported                  | 20,7%                           | 18,3%                   | 91,8%                   | 144% [31 UT]                    | 190% [31 UT]            | 206% [28 UT]            | 395% [31 UT]                    | 534% [31 UT]            | 565% [28 UT]            |
| Risk margin                          | 96,1                            | 76,9                    | 73,9                    | -5% [13 UT]                     | 112% [6 UT]             | 107% [5 UT]             | -41% [13 UT]                    | 363% [6 UT]             | 352% [5 UT]             |
| Other                                | 421,4                           | 393,0                   | 377,0                   | 192% [13 UT]                    | 200% [4 UT]             | 175% [4 UT]             | 574% [13 UT]                    | 569% [4 UT]             | 515% [4 UT]             |
| <b>Total liabilities</b>             | <b>4.324,6</b>                  | <b>3.545,6</b>          | <b>3.518,5</b>          | 57% [5 UT]                      | 70% [5 UT]              | 92% [5 UT]              | 176% [5 UT]                     | 222% [5 UT]             | 282% [5 UT]             |
| <b>Assets less Liabilities</b>       | <b>460,6</b>                    | <b>453,7</b>            | <b>426,0</b>            | 132% [17 UT]                    | 238% [16 UT]            | 265% [16 UT]            | 328% [17 UT]                    | 649% [16 UT]            | 709% [16 UT]            |
| <b>Solvency Capital Requirement</b>  | <b>341,4</b>                    | <b>259,2</b>            | <b>239,6</b>            | 141% [6 UT]                     |                         |                         | 351% [6 UT]                     |                         |                         |
| Surplus                              | 147,7                           | 220,9                   | 210,9                   | 229% [4 UT]                     | 221% [3 UT]             | 245% [3 UT]             | 592% [4 UT]                     | 563% [3 UT]             | 586% [3 UT]             |
| Solvency ratio                       | 143%                            | 185%                    | 188%                    | 154% [6 UT]                     |                         |                         | 375% [6 UT]                     |                         |                         |
| <b>Minimum Capital Requirement</b>   | <b>110,0</b>                    | <b>82,6</b>             | <b>78,2</b>             | 206% [3 UT]                     | 205% [3 UT]             | 201% [3 UT]             | 612% [3 UT]                     | 621% [3 UT]             | 472% [3 UT]             |
| Surplus                              | 355,0                           | 379,2                   | 354,6                   | 143% [14 UT]                    | 195% [11 UT]            | 191% [11 UT]            | 428% [14 UT]                    | 652% [11 UT]            | 590% [11 UT]            |
| Solvency ratio                       | 423%                            | 559%                    | 553%                    | 140% [4 UT]                     | 144% [4 UT]             | 116% [4 UT]             | 371% [4 UT]                     | 376% [4 UT]             | 303% [4 UT]             |
|                                      |                                 |                         |                         | 310% [35 UT]                    | 308% [35 UT]            | 326% [25 UT]            | 1134% [35 UT]                   | 1127% [35 UT]           | 1208% [25 UT]           |
|                                      |                                 |                         |                         | 65% [28 UT]                     | 145% [24 UT]            | 154% [23 UT]            | 144% [28 UT]                    | 439% [24 UT]            | 457% [23 UT]            |
|                                      |                                 |                         |                         | 141% [4 UT]                     | 121% [4 UT]             |                         | 403% [4 UT]                     | 360% [4 UT]             |                         |
|                                      |                                 |                         |                         | 186% [15 UT]                    | 220% [12 UT]            | 192% [12 UT]            | 706% [15 UT]                    | 863% [12 UT]            | 753% [12 UT]            |
|                                      |                                 |                         |                         | 156% [4 UT]                     | 200% [3 UT]             | 195% [3 UT]             | 467% [4 UT]                     | 606% [3 UT]             | 576% [3 UT]             |
|                                      |                                 |                         |                         | 256% [11 UT]                    |                         |                         | 807% [11 UT]                    |                         |                         |
|                                      |                                 |                         |                         | 90% [13 UT]                     | 99% [13 UT]             | 110% [12 UT]            | 319% [13 UT]                    | 349% [13 UT]            | 398% [12 UT]            |

TABLE 16: COMPARISON OF BALANCE SHEETS AND CAPITAL RATIOS ACROSS REFERENCE DATES

The comparison of the base scenario across reference dates shows that the tested Pillar 1 approach is sensitive to financial market movements. It should be noted that for the LTGA purpose, balance sheet composition has stayed unchanged across different reference dates. Therefore the observed changes are solely triggered by changed financial market conditions. It should further be noted that only a subset of undertakings have provided results for YE04 and YE09 reference dates. Sample sizes across scenarios 1, 10 and 12 are not the same as can be seen in the balance sheet comparison.

## 9.7.2. Undertakings by size

Overall it seems that average solvency ratios of smaller undertakings are far higher in all LTGA scenarios compared to larger ones. This seems driven by the fact that Member States less affected by the current spread crisis and also with less relevance of LTG products contribute with a relatively large proportion to the sample of small undertakings.

However, when looking into the size comparison for larger Member States that have participants in the large, medium and small buckets, the described effect is less observable.

## 9.7.3. Undertakings by type

By definition, LTG business is more relevant for Life insurance business than for non-life business. This is also confirmed by the LTGA results. Non-life and reinsurance undertakings are mostly not “in need” for the LTG measures, even under YE11 financial market conditions; quite a large portion of the participating life insurers were “in need” when looking at the SCR ratios. And even with those LTG measure, many of the participating life undertakings would not reach a 100% SCR ratio, e.g. 30% in base scenario 1 on average across Member States.

For composites, the picture is more positive compared to pure life undertakings, but overall impacts of the LTG measure are relatively similar.

For the described reasons, the below tables only cover life insurers.

### Life undertakings

| Number of undertakings in the sample        | 276               | 273  | 251                                       | 266   | 63   | 234  | 175   | 69   | 174  | 47  | 172                             | 108   | 158   |
|---|-------------------|--|---|---|--|--|---|--|--|---|---------------------------------|---|---|
| Assets                                      | Solvency I        | Scenario 1<br>Baseline w/<br>LTGP          | Scenario 2<br>Lower CCP<br>(50%)          | Scenario 3<br>Higher CCP<br>(250%)          | Scenario 4<br>Alternative<br>classic MA          | Scenario 5<br>Longer<br>convergence          | Scenario 6<br>Extended MA<br>Alternative          | Scenario 7<br>Extended MA<br>Standard 2          | Scenario 8<br>Transitionals<br>existing          | Scenario 9<br>Transitionals<br>paid-in          | Scenario 10<br>end 2009         | Scenario 11<br>end 2004 +<br>Transitionals          | Scenario 12<br>end 2004,<br>classic MA          |
| Reinsurance                                 | 115,1             | 104,1                                      | 104,4                                     | 101,8                                       | 71,9   | 99,7   | 95,4  | 70,4   | 91,2   | 71,8  | 89,4                            | 75,6  | 90,2  |
| Investments                                 | 2.980,3           | 2.941,5                                    | 2.900,7                                   | 2.934,9                                     | 745,7  | 2.771,2                                      | 2.407,6   | 683,2  | 1.999,3  | 529,9   | 2.574,9                         | 1.204,2   | 2.551,3   |
| Unit linked investments                     | 679,0             | 655,7                                      | 645,5                                     | 645,8                                       | 291,9  | 581,7  | 562,7   | 293,5  | 504,8  | 255,7   | 578,8                           | 386,3   | 556,5   |
| Other                                       | 471,0             | 508,1                                      | 492,5                                     | 503,4                                       | 148,3  | 463,4  | 463,4   | 156,0  | 457,2  | 97,3  | 401,1                           | 280,7   | 398,9   |
| <b>Total assets</b>                         | <b>4.245,4</b>    | <b>4.209,5</b>                             | <b>4.143,0</b>                            | <b>4.185,9</b>                              | <b>1.257,8</b>                                   | <b>3.939,7</b>                               | <b>3.529,2</b>                                    | <b>1.203,2</b>                                   | <b>3.052,5</b>                                   | <b>954,7</b>                                    | <b>3.644,2</b>                  | <b>1.946,8</b>                                      | <b>3.596,9</b>                                  |
| <b>Liabilities</b>                          | <b>Solvency I</b> | <b>Scenario 1<br/>Baseline w/<br/>LTGP</b> | <b>Scenario 2<br/>Lower CCP<br/>(50%)</b> | <b>Scenario 3<br/>Higher CCP<br/>(250%)</b> | <b>Scenario 4<br/>Alternative<br/>classic MA</b> | <b>Scenario 5<br/>Longer<br/>convergence</b> | <b>Scenario 6<br/>Extended MA<br/>Alternative</b> | <b>Scenario 7<br/>Extended MA<br/>Standard 2</b> | <b>Scenario 8<br/>Transitionals<br/>existing</b> | <b>Scenario 9<br/>Transitionals<br/>paid-in</b> | <b>Scenario 10<br/>end 2009</b> | <b>Scenario 11<br/>end 2004 +<br/>Transitionals</b> | <b>Scenario 12<br/>end 2004,<br/>classic MA</b> |
| SI: BE: SI: Insurance liabilities           | 3.648,1           | 3.483,1                                    | 3.474,1                                   | 3.358,7                                     | 1.026,1  | 3.249,5                                      | 2.954,2   | 990,2  | 2.622,3  | 790,3   | 2.902,1                         | 1.654,7   | 2.894,4   |
| LTG measures applied                        |                   |  |   |   |  |  |   |  |  |   |                                 |   |   |
| MA, Classic                                 |                   | 6,0%                                       | 5,9%                                      | 6,1%  | 21,0%  | 5,6%   | 5,1%  | 17,4%  | 7,2%   | 19,4%   | 5,9%                            | 9,3%  | 5,6%  |
| MA, Extended                                |                   | 2,6%                                       | 2,6%                                      | 2,7%  | 7,9%   | 2,8%   | 63,5%   | 9,0%   |  |   | 2,7%                            |   | 3,0%  |
| Transitional                                |                   |  |   |   |  |  |   |  |  |   |                                 |   |   |
| CCP   |                   | 73,2%                                      | 74,7%                                     | 73,1%                                       | 61,6%  | 72,8%  | 13,2%   | 57,0%  | 58,0%  | 39,8%   | 21,7%                           | 74,4%   | 54,9%   |
| None of the LTG measures / not reported     |                   | 18,3%                                      | 16,9%                                     | 18,1%                                       | 9,5%   | 18,9%  | 18,2%   | 16,6%  | 9,2%   | 19,1%   | 16,9%                           | 35,8%   | 91,4%   |
| Risk margin                                 |                   | 76,1                                       | 75,6                                      | 77,2  | 30,3   | 72,2   | 61,9  | 24,9   | 55,1   | 19,5  | 64,7                            | 34,6  | 62,0  |
| Other                                       | 597,4             | 335,3                                      | 325,8                                     | 352,2                                       | 108,7  | 322,5  | 288,6   | 113,3  | 238,8  | 82,4  | 329,7                           | 152,4   | 316,4   |
| <b>Total liabilities</b>                    | <b>4.245,5</b>    | <b>3.894,4</b>                             | <b>3.875,5</b>                            | <b>3.788,1</b>                              | <b>1.165,2</b>                                   | <b>3.644,2</b>                               | <b>3.304,7</b>                                    | <b>1.128,4</b>                                   | <b>2.916,2</b>                                   | <b>892,2</b>                                    | <b>3.296,5</b>                  | <b>1.841,7</b>                                      | <b>3.272,7</b>                                  |
| <b>Excess of Assets over Liabilities</b>    | <b>0,0</b>        | <b>315,1</b>                               | <b>267,5</b>                              | <b>397,8</b>                                | <b>92,5</b>                                      | <b>295,5</b>                                 | <b>224,5</b>                                      | <b>74,8</b>                                      | <b>136,3</b>                                     | <b>62,5</b>                                     | <b>347,7</b>                    | <b>105,2</b>  | <b>324,2</b>                                    |
| <b>SI: SCR : SI: Required Solvency Marg</b> | <b>144,8</b>      | <b>260,1</b>                               | <b>253,0</b>                              | <b>301,5</b>                                | <b>82,2</b>                                      | <b>248,8</b>                                 | <b>194,4</b>                                      | <b>70,3</b>                                      | <b>190,3</b>                                     | <b>62,1</b>                                     | <b>199,8</b>                    | <b>123,6</b>  | <b>182,5</b>                                    |
| Surplus                                     | 180,6             | 80,3                                       | 38,0                                      | 122,7                                       | 13,8   | 71,7   | 51,3  | 8,2  | -65,8  | 1,9   | 171,8                           | -21,1   | 164,4   |
| Solvency ratio                              | 224,7%            | 130,9%                                     | 115,0%                                    | 140,7%                                      | 116,8%   | 128,8%                                       | 126,4%  | 111,7%   | 65,4%  | 103,1%  | 186,0%                          | 82,9%   | 190,1%  |
| <b>Minimum Capital Requirement</b>          | <b>81</b>         | <b>81</b>                                  | <b>86</b>                                 | <b>24</b>                                   | <b>65</b>  | <b>226</b>                                   | <b>163</b>  | <b>46</b>  | <b>61</b>  | <b>18</b>                                       | <b>61</b>                       | <b>38</b>   | <b>58</b>                                       |
| Surplus                                     | 239               | 186  | 321                                       | 65  | 24   | 226  | 163   | 46   | 41   | 39  | 295                             | 54  | 274   |
| Solvency ratio                              |                   | 396,4%                                     | 329,4%                                    | 474,0%                                      | 371,8%   | 395,5%                                       | 354,1%  | 272,6%   | 167,4%   | 316,4%  | 580,0%                          | 242,5%  | 574,4%  |

TABLE 17: MAJOR B/S ITEMS AND CAPITAL REQUIREMENTS FOR LIFE UNDERTAKINGS (INCLUDING COMPOSITES)



| SCR Ratios       | Scenario 1<br>Baseline w/<br>LTGP | Scenario 2<br>Lower CCP<br>(50%) | Scenario 3<br>Higher CCP<br>(250%) | Scenario 4<br>Alternative<br>classic MA | Scenario 5<br>Longer<br>convergence | Scenario 6<br>Extended MA<br>Alternative | Scenario 7<br>Extended MA<br>Standard 2 | Scenario 8<br>Transitionals<br>existing | Scenario 9<br>Transitionals<br>paid-in | Scenario 10<br>end 2009 | Scenario 11<br>end 2004 +<br>Transitionals | Scenario 12<br>end 2004,<br>classic MA |
|------------------|-----------------------------------|----------------------------------|------------------------------------|---|-------------------------------------|--|---|---|--|-------------------------|--|--|
| Weighted average | 126% [208 UT]                     | 108% [191 UT]                    | 137% [201 UT]                      | 121% [55 UT]                            | 123% [177 UT]                       | 114% [139 UT]                            | 117% [62 UT]                            | 58% [145 UT]                            | 90% [40 UT]                            | 178% [137 UT]           | 71% [91 UT]                                | 177% [126 UT]                          |
| Austria          | 109% [9 UT]                       | 95% [9 UT]                       | 135% [9 UT]                        |   | 110% [8 UT]                         |  |   |   |  |                         |  |  |
| Belgium          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Bulgaria         | 247% [3 UT]                       | 245% [3 UT]                      | 231% [3 UT]                        |   |                                     |  |   |   |  |                         |  |  |
| Cyprus           | 218% [5 UT]                       | 208% [5 UT]                      | 196% [5 UT]                        | 211% [3 UT]                             | 214% [4 UT]                         | 226% [5 UT]                              | 211% [3 UT]                             | 297% [5 UT]                             |  | 303% [4 UT]             | 259% [4 UT]                                | 313% [3 UT]                            |
| Germany          | 113% [46 UT]                      | 83% [15 UT]                      | 132% [46 UT]                       |   | 105% [43 UT]                        | 78% [42 UT]                              | 150% [8 UT]                             | 116% [43 UT]                            |  | 213% [22 UT]            | 65% [18 UT]                                | 204% [21 UT]                           |
| Denmark          | 362% [10 UT]                      | 291% [10 UT]                     | 352% [10 UT]                       | 347% [6 UT]                             | 342% [10 UT]                        | 349% [7 UT]                              | 350% [6 UT]                             |   |  |                         |  |  |
| Estonia          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Spain            | 77% [11 UT]                       | 69% [11 UT]                      | 91% [11 UT]                        | 76% [11 UT]                             | 73% [11 UT]                         | 102% [11 UT]                             | 73% [11 UT]                             | 98% [11 UT]                             | 107% [6 UT]                            | 148% [11 UT]            | 257% [8 UT]                                | 187% [11 UT]                           |
| Finland          | 120% [4 UT]                       | 108% [4 UT]                      | 135% [4 UT]                        | 129% [3 UT]                             | 121% [4 UT]                         | 129% [4 UT]                              | 121% [4 UT]                             | 126% [4 UT]                             | 117% [3 UT]                            | 190% [4 UT]             | 108% [4 UT]                                | 124% [3 UT]                            |
| France           | 127% [13 UT]                      | 104% [13 UT]                     | 138% [13 UT]                       |   | 123% [13 UT]                        | 145% [12 UT]                             |   | -32% [10 UT]                            |  | 192% [13 UT]            | -30% [6 UT]                                | 231% [13 UT]                           |
| Greece           | 29% [5 UT]                        | 12% [5 UT]                       | 52% [5 UT]                         |   |                                     | 55% [4 UT]                               |   | 76% [4 UT]                              |  | 273% [3 UT]             | 306% [3 UT]                                |  |
| Hungary          | 147% [5 UT]                       |                                  | 146% [5 UT]                        |   | 147% [5 UT]                         |  |   |   |  |                         |  |  |
| Ireland          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Italy            | 66% [9 UT]                        | 35% [9 UT]                       | 83% [9 UT]                         |   |                                     | 209% [9 UT]                              |   | -219% [8 UT]                            |  | 264% [8 UT]             |  | 407% [8 UT]                            |
| Lichtenstein     | 141% [6 UT]                       | 140% [6 UT]                      |                                    |   |                                     |  |   |   |  |                         |  |  |
| Lithuania        | 198% [4 UT]                       | 197% [3 UT]                      | 202% [4 UT]                        |   | 198% [3 UT]                         |  |   |   |  | 200% [3 UT]             |  | 200% [3 UT]                            |
| Luxemburg        | 203% [5 UT]                       | 161% [4 UT]                      | 192% [5 UT]                        |   | 164% [4 UT]                         | 214% [4 UT]                              | 133% [3 UT]                             |   |  |                         |  |  |
| Malta            | 206% [3 UT]                       | 219% [3 UT]                      | 174% [3 UT]                        |   |                                     |  |   |   |  | 205% [3 UT]             |  | 201% [3 UT]                            |
| Netherlands      | 145% [8 UT]                       | 133% [8 UT]                      | 140% [8 UT]                        | 135% [5 UT]                             | 135% [7 UT]                         | 139% [5 UT]                              | 133% [5 UT]                             | 127% [5 UT]                             |  | 202% [6 UT]             | 181% [4 UT]                                | 198% [6 UT]                            |
| Norway           | 125% [3 UT]                       | 96% [3 UT]                       | 164% [3 UT]                        |   | 126% [3 UT]                         |  |   |   |  | 131% [3 UT]             |  | 96% [3 UT]                             |
| Poland           | 375% [17 UT]                      | 370% [17 UT]                     | 371% [17 UT]                       | 453% [7 UT]                             | 380% [16 UT]                        | 454% [9 UT]                              | 453% [7 UT]                             | 276% [15 UT]                            | 178% [12 UT]                           | 376% [17 UT]            | 267% [17 UT]                               | 395% [14 UT]                           |
| Portugal         | 39% [11 UT]                       | 26% [11 UT]                      | 59% [11 UT]                        |   | 35% [10 UT]                         | 141% [7 UT]                              |   | 23% [8 UT]                              | 22% [4 UT]                             | 126% [9 UT]             | 110% [7 UT]                                | 140% [9 UT]                            |
| Romania          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Sweden           | 169% [10 UT]                      | 159% [10 UT]                     | 187% [10 UT]                       |   | 156% [10 UT]                        | 132% [3 UT]                              |   |   |  | 199% [8 UT]             |  | 167% [8 UT]                            |
| Slovenia         | 156% [4 UT]                       | 148% [4 UT]                      | 146% [4 UT]                        |   | 157% [4 UT]                         |  |   | 161% [4 UT]                             |  | 200% [3 UT]             |  | 195% [3 UT]                            |
| Slovakia         |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| United Kingdom   | 92% [12 UT]                       | 84% [11 UT]                      | 99% [11 UT]                        | 93% [10 UT]                             | 91% [9 UT]                          | 76% [8 UT]                               | 75% [5 UT]                              | 99% [11 UT]                             | 99% [7 UT]                             | 101% [12 UT]            | 79% [9 UT]                                 | 105% [11 UT]                           |

TABLE 18: SCR RATIOS BY SCENARIO FOR LIFE UNDERTAKINGS (NOT INCLUDING COMPOSITES)

| SCR Ratios       | Scenario 1<br>Baseline w/<br>LTGP | Scenario 2<br>Lower CCP<br>(50%) | Scenario 3<br>Higher CCP<br>(250%) | Scenario 4<br>Alternative<br>classic MA | Scenario 5<br>Longer<br>convergence | Scenario 6<br>Extended MA<br>Alternative | Scenario 7<br>Extended MA<br>Standard 2 | Scenario 8<br>Transitionals<br>existing | Scenario 9<br>Transitionals<br>paid-in | Scenario 10<br>end 2009 | Scenario 11<br>end 2004 +<br>Transitionals | Scenario 12<br>end 2004,<br>classic MA |
|------------------|-----------------------------------|----------------------------------|------------------------------------|---|-------------------------------------|--|---|---|--|-------------------------|--|--|
| Weighted average | 131% [273 UT]                     | 115% [251 UT]                    | 141% [266 UT]                      | 117% [63 UT]                            | 129% [234 UT]                       | 126% [175 UT]                            | 112% [69 UT]                            | 65% [174 UT]                            | 103% [47 UT]                           | 186% [172 UT]           | 83% [108 UT]                               | 190% [158 UT]                          |
| Austria          | 140% [19 UT]                      | 119% [19 UT]                     | 169% [19 UT]                       |   | 137% [18 UT]                        | 204% [5 UT]                              |   | 108% [9 UT]                             |  | 225% [4 UT]             | 149% [3 UT]                                | 190% [4 UT]                            |
| Belgium          | 104% [7 UT]                       | 97% [7 UT]                       | 103% [7 UT]                        |   | 103% [6 UT]                         | 144% [5 UT]                              |   |   |  | 180% [6 UT]             |  | 232% [6 UT]                            |
| Bulgaria         | 247% [3 UT]                       | 245% [3 UT]                      | 231% [3 UT]                        |   |                                     |  |   |   |  |                         |  |  |
| Cyprus           | 202% [7 UT]                       | 193% [7 UT]                      | 186% [7 UT]                        | 211% [3 UT]                             | 214% [4 UT]                         | 226% [5 UT]                              | 211% [3 UT]                             | 297% [5 UT]                             |  | 289% [5 UT]             | 251% [5 UT]                                | 313% [3 UT]                            |
| Germany          | 113% [46 UT]                      | 83% [15 UT]                      | 132% [46 UT]                       |   | 105% [43 UT]                        | 78% [42 UT]                              | 150% [8 UT]                             | 116% [43 UT]                            |  | 213% [22 UT]            | 65% [18 UT]                                | 204% [21 UT]                           |
| Denmark          | 362% [10 UT]                      | 291% [10 UT]                     | 352% [10 UT]                       | 347% [6 UT]                             | 342% [10 UT]                        | 349% [7 UT]                              | 350% [6 UT]                             |   |  |                         |  |  |
| Estonia          | 314% [3 UT]                       | 293% [3 UT]                      | 279% [3 UT]                        |   | 291% [3 UT]                         |  |   |   |  |                         |  |  |
| Spain            | 91% [16 UT]                       | 82% [16 UT]                      | 104% [16 UT]                       | 89% [14 UT]                             | 87% [16 UT]                         | 112% [16 UT]                             | 86% [14 UT]                             | 112% [14 UT]                            | 115% [8 UT]                            | 163% [14 UT]            | 245% [11 UT]                               | 196% [14 UT]                           |
| Finland          | 120% [4 UT]                       | 108% [4 UT]                      | 135% [4 UT]                        | 129% [3 UT]                             | 121% [4 UT]                         | 129% [4 UT]                              | 121% [4 UT]                             | 126% [4 UT]                             | 117% [3 UT]                            | 190% [4 UT]             | 108% [4 UT]                                | 124% [3 UT]                            |
| France           | 148% [19 UT]                      | 126% [19 UT]                     | 157% [19 UT]                       |   | 143% [19 UT]                        | 162% [16 UT]                             |   | -20% [13 UT]                            |  | 211% [19 UT]            | -10% [10 UT]                               | 243% [18 UT]                           |
| Greece           | -19% [10 UT]                      | -35% [10 UT]                     | 11% [10 UT]                        |   | -56% [5 UT]                         | -11% [8 UT]                              |   | 9% [6 UT]                               |  | 111% [5 UT]             | 110% [5 UT]                                | 107% [4 UT]                            |
| Hungary          | 193% [10 UT]                      |                                  | 190% [10 UT]                       |   | 193% [10 UT]                        |  |   |   |  | 199% [3 UT]             |  | 174% [3 UT]                            |
| Ireland          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Italy            | 132% [17 UT]                      | 121% [17 UT]                     | 138% [17 UT]                       | 82% [3 UT]                              | 155% [9 UT]                         | 182% [17 UT]                             | 91% [4 UT]                              | 23% [16 UT]                             | 116% [3 UT]                            | 238% [16 UT]            | 191% [4 UT]                                | 265% [16 UT]                           |
| Lichtenstein     | 141% [6 UT]                       | 140% [6 UT]                      |                                    |   |                                     |  |   |   |  |                         |  |  |
| Lithuania        | 229% [4 UT]                       | 230% [3 UT]                      | 205% [4 UT]                        |   | 217% [3 UT]                         |  |   |   |  | 221% [3 UT]             |  | 245% [3 UT]                            |
| Luxemburg        | 203% [5 UT]                       | 161% [4 UT]                      | 192% [5 UT]                        |   | 164% [4 UT]                         | 214% [4 UT]                              | 133% [3 UT]                             |   |  |                         |  |  |
| Malta            | 206% [3 UT]                       | 219% [3 UT]                      | 174% [3 UT]                        |   |                                     |  |   |   |  | 205% [3 UT]             |  | 201% [3 UT]                            |
| Netherlands      | 145% [8 UT]                       | 133% [8 UT]                      | 140% [8 UT]                        | 135% [5 UT]                             | 135% [7 UT]                         | 139% [5 UT]                              | 133% [5 UT]                             | 127% [5 UT]                             |  | 202% [6 UT]             | 181% [4 UT]                                | 198% [6 UT]                            |
| Norway           | 125% [3 UT]                       | 96% [3 UT]                       | 164% [3 UT]                        |   | 126% [3 UT]                         |  |   |   |  | 131% [3 UT]             |  | 96% [3 UT]                             |
| Poland           | 375% [17 UT]                      | 370% [17 UT]                     | 371% [17 UT]                       | 453% [7 UT]                             | 380% [16 UT]                        | 454% [9 UT]                              | 453% [7 UT]                             | 276% [15 UT]                            | 178% [12 UT]                           | 376% [17 UT]            | 267% [17 UT]                               | 395% [14 UT]                           |
| Portugal         | 39% [11 UT]                       | 26% [11 UT]                      | 59% [11 UT]                        |   | 35% [10 UT]                         | 141% [7 UT]                              |   | 23% [8 UT]                              | 22% [4 UT]                             | 126% [9 UT]             | 110% [7 UT]                                | 140% [9 UT]                            |
| Romania          | 238% [3 UT]                       | 241% [3 UT]                      | 239% [3 UT]                        | 240% [3 UT]                             | 247% [3 UT]                         | 236% [3 UT]                              | 238% [3 UT]                             | 221% [3 UT]                             |  | 190% [3 UT]             |  |  |
| Sweden           | 172% [12 UT]                      | 161% [12 UT]                     | 189% [12 UT]                       |   | 158% [12 UT]                        | 132% [3 UT]                              |   |   |  | 204% [10 UT]            |  | 173% [10 UT]                           |
| Slovenia         | 156% [4 UT]                       | 148% [4 UT]                      | 146% [4 UT]                        |   | 157% [4 UT]                         |  |   | 161% [4 UT]                             |  | 200% [3 UT]             |  | 195% [3 UT]                            |
| Slovakia         | 256% [11 UT]                      | 243% [11 UT]                     | 260% [11 UT]                       |   | 273% [9 UT]                         | 254% [5 UT]                              |   |   |  |                         |  |  |
| United Kingdom   | 90% [13 UT]                       | 84% [12 UT]                      | 96% [12 UT]                        | 93% [11 UT]                             | 89% [10 UT]                         | 77% [9 UT]                               | 77% [6 UT]                              | 94% [12 UT]                             | 94% [8 UT]                             | 99% [13 UT]             | 91% [10 UT]                                | 110% [12 UT]                           |

TABLE 19: SCR RATIOS BY SCENARIO FOR LIFE UNDERTAKINGS (INCLUDING COMPOSITES)



| [SCR / MCR] | Scenario 1  | Scenario 2  | Scenario 3  | Scenario 4  | Scenario 5  | Scenario 6  | Scenario 7  | Scenario 8  | Scenario 9  | Scenario 10 | Scenario 11 | Scenario 12 |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| EU          | [29% / 10%] | [37% / 16%] | [23% / 5%]  | [30% / 11%] | [30% / 7%]  | [33% / 13%] | [32% / 12%] | [40% / 22%] | [32% / 15%] | [12% / 3%]  | [24% / 15%] | [13% / 4%]  |
| AT          | [21% / 5%]  | [37% / 5%]  | [11% / 5%]  | [- / -]     | [22% / 6%]  | [- / -]     | [- / -]     | [33% / 11%] | [- / -]     | [- / -]     | [33% / -]   | [25% / -]   |
| BE          | [57% / -]   | [57% / 29%] | [43% / -]   | [- / -]     | [50% / -]   | [20% / -]   | [- / -]     | [- / -]     | [- / -]     | [17% / -]   | [- / -]     | [- / -]     |
| BG          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| CY          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| DE          | [41% / 7%]  | [60% / 17%] | [30% / -]   | [- / -]     | [47% / 5%]  | [62% / 26%] | [25% / -]   | [40% / 9%]  | [- / -]     | [9% / -]    | [50% / 33%] | [14% / 5%]  |
| DK          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| EE          | [33% / -]   | [67% / -]   | [- / -]     | [- / -]     | [67% / -]   | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| ES          | [38% / 19%] | [56% / 19%] | [38% / 6%]  | [43% / 21%] | [38% / 19%] | [50% / 6%]  | [43% / 21%] | [50% / 21%] | [38% / 13%] | [14% / -]   | [- / -]     | [7% / -]    |
| FI          | [50% / -]   | [50% / -]   | [25% / -]   | [33% / -]   | [50% / -]   | [25% / -]   | [50% / -]   | [25% / -]   | [33% / -]   | [- / -]     | [25% / -]   | [33% / -]   |
| FR          | [16% / -]   | [32% / -]   | [11% / -]   | [- / -]     | [26% / -]   | [13% / 6%]  | [- / -]     | [62% / 54%] | [- / -]     | [- / -]     | [40% / 20%] | [6% / -]    |
| GR          | [80% / 50%] | [80% / 60%] | [80% / 50%] | 100% / 100% | [80% / 60%] | [75% / 50%] | 100% / 100% | [50% / 33%] | [- / -]     | [40% / 20%] | [20% / 20%] | [50% / 25%] |
| HU          | [20% / -]   | [100% / -]  | [20% / -]   | [100% / -]  | [20% / -]   | [- / -]     | [100% / -]  | 100% / 50%  | 100% / 100% | [- / -]     | 100% / 100% | [33% / -]   |
| IE          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| IT          | [47% / 24%] | [59% / 41%] | [41% / -]   | 100% / 33%  | [44% / 11%] | [12% / -]   | [75% / 25%] | [69% / 56%] | [67% / 33%] | [- / -]     | [- / -]     | [- / -]     |
| LI          | [33% / 33%] | [33% / 33%] | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| LT          | [- / 25%]   | [- / 33%]   | [- / 25%]   | [- / -]     | [- / 33%]   | [- / -]     | [- / -]     | [- / 50%]   | [- / -]     | [- / 33%]   | [- / 100%]  | [- / 33%]   |
| LU          | [20% / -]   | [25% / -]   | [- / -]     | [50% / -]   | [- / -]     | [- / -]     | [33% / 33%] | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| MT          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| NL          | [13% / -]   | [13% / 13%] | [- / -]     | [20% / -]   | [14% / -]   | [40% / -]   | [20% / -]   | [20% / 20%] | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| NO          | [33% / -]   | [67% / 33%] | [- / -]     | [- / -]     | [33% / -]   | [- / -]     | [- / -]     | 100% / 50%  | 100% / 100% | [33% / -]   | [100% / -]  | [67% / 33%] |
| PL          | [- / 6%]    | [- / 6%]    | [- / 6%]    | [- / 14%]   | [- / 6%]    | [- / 11%]   | [- / 14%]   | [- / 7%]    | [- / 8%]    | [- / 6%]    | [- / 12%]   | [- / 14%]   |
| PT          | [64% / 36%] | [64% / 45%] | [55% / 27%] | [- / -]     | [70% / 40%] | [29% / 29%] | [- / -]     | [75% / 63%] | [75% / 25%] | [33% / -]   | [43% / -]   | [22% / -]   |
| RO          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| SE          | [17% / -]   | [17% / -]   | [17% / -]   | [- / -]     | [25% / -]   | [33% / -]   | [- / -]     | [- / -]     | [- / -]     | [20% / -]   | [- / -]     | [20% / -]   |
| SI          | [25% / -]   | [25% / -]   | [25% / -]   | [- / -]     | [25% / -]   | [- / -]     | [100% / -]  | [25% / -]   | [- / -]     | [- / -]     | [50% / 50%] | [- / -]     |
| SK          | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     | [- / -]     |
| UK          | [54% / 15%] | [58% / 25%] | [58% / 8%]  | [45% / 9%]  | [50% / 10%] | [67% / 22%] | [67% / 17%] | [58% / 17%] | [50% / 13%] | [54% / 15%] | [40% / 20%] | [42% / 8%]  |

TABLE 20: PROPORTION OF LIFE UNDERTAKINGS (INCLUDING COMPOSITES) WITH AN SCR/MCR RATIO <100%

The above chart shows that in a number of Member States, a certain proportion of the life undertakings (including composites) would not have reached a 100% SCR respectively MCR ratio in some scenarios, most notably YE11 scenarios though (i.e. scenarios 1-9). However, it should be noted that the sample across the scenarios is different and the proportion is based on a pure counting of undertakings in the LTGA, i.e. not linked to market share. Furthermore, many undertakings have not yet optimised their solvency positions based on the Solvency II framework, but rather based on the current regulatory regime.

| MCR Ratios       | Scenario 1<br>Baseline w/<br>LTGP | Scenario 2<br>Lower CCP<br>(50%) | Scenario 3<br>Higher CCP<br>(250%) | Scenario 4<br>Alternative<br>classic MA | Scenario 5<br>Longer<br>convergence | Scenario 6<br>Extended MA<br>Alternative | Scenario 7<br>Extended MA<br>Standard 2 | Scenario 8<br>Transitional<br>existing | Scenario 9<br>Transitional<br>paid-in | Scenario 10<br>end 2009 | Scenario 11<br>end 2004 +<br>Transitional | Scenario 12<br>end 2004,<br>classic MA |
|------------------|-----------------------------------|----------------------------------|------------------------------------|---|-------------------------------------|--|---|--|---------------------------------------|-------------------------|---|--|
| Weighted average | 392% [208 UT]<br>343% [9 UT]      | 317% [191 UT]<br>273% [9 UT]     | 474% [201 UT]<br>457% [9 UT]       | 404% [55 UT]                            | 391% [177 UT]<br>356% [8 UT]        | 325% [139 UT]                            | 286% [62 UT]                            | 146% [145 UT]                          | 272% [40 UT]                          | 571% [137 UT]           | 204% [91 UT]                              | 549% [126 UT]                          |
| Austria          |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Belgium          |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Bulgaria         | 545% [3 UT]                       | 495% [3 UT]                      | 715% [3 UT]                        |   |                                     |  |   |  |                                       |                         |   |  |
| Cyprus           | 758% [5 UT]                       | 698% [5 UT]                      | 732% [5 UT]                        | 668% [3 UT]                             | 721% [4 UT]                         | 744% [5 UT]                              | 668% [3 UT]                             | 955% [5 UT]                            |                                       | 994% [4 UT]             | 963% [4 UT]                               | 962% [3 UT]                            |
| Germany          | 372% [46 UT]                      | 243% [35 UT]                     | 484% [46 UT]                       |   | 348% [43 UT]                        | 214% [42 UT]                             | 426% [8 UT]                             | 334% [43 UT]                           |                                       | 663% [22 UT]            | 193% [18 UT]                              | 552% [21 UT]                           |
| Denmark          | 1093% [10 UT]                     | 831% [10 UT]                     | 1178% [10 UT]                      | 924% [6 UT]                             | 1039% [10 UT]                       | 801% [7 UT]                              | 917% [6 UT]                             |  |                                       |                         |   |  |
| Estonia          |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Spain            | 162% [11 UT]                      | 137% [11 UT]                     | 221% [11 UT]                       | 161% [11 UT]                            | 151% [11 UT]                        | 227% [11 UT]                             | 150% [11 UT]                            | 223% [11 UT]                           | 231% [6 UT]                           | 361% [11 UT]            | 581% [8 UT]                               | 459% [11 UT]                           |
| Finland          | 472% [4 UT]                       | 425% [4 UT]                      | 535% [4 UT]                        | 506% [3 UT]                             | 476% [4 UT]                         | 509% [4 UT]                              | 476% [4 UT]                             | 494% [4 UT]                            | 459% [3 UT]                           | 750% [4 UT]             | 421% [4 UT]                               | 484% [3 UT]                            |
| France           | 316% [13 UT]                      | 247% [13 UT]                     | 407% [13 UT]                       |   | 311% [13 UT]                        | 339% [12 UT]                             |   | -155% [10 UT]                          |                                       | 500% [13 UT]            | -142% [6 UT]                              | 560% [13 UT]                           |
| Greece           | 104% [5 UT]                       | 35% [5 UT]                       | 206% [5 UT]                        |   |                                     | 184% [4 UT]                              |   | 247% [4 UT]                            |                                       | 937% [3 UT]             | 1063% [3 UT]                              |  |
| Hungary          | 497% [5 UT]                       |                                  | 528% [5 UT]                        |   | 498% [5 UT]                         |  |   |  |                                       |                         |   |  |
| Ireland          |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Italy            | 119% [9 UT]                       | 35% [9 UT]                       | 249% [9 UT]                        |   |                                     | 508% [9 UT]                              |   | -559% [8 UT]                           |                                       | 592% [8 UT]             |   | 893% [8 UT]                            |
| Lichtenstein     | 351% [6 UT]                       | 346% [6 UT]                      |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Lithuania        | 790% [4 UT]                       | 783% [3 UT]                      | 806% [4 UT]                        |   | 789% [3 UT]                         |  |   |  |                                       | 797% [3 UT]             |   | 796% [3 UT]                            |
| Luxembourg       | 547% [3 UT]                       | 387% [4 UT]                      | 560% [5 UT]                        |   | 431% [4 UT]                         | 568% [4 UT]                              | 9% [3 UT]                               |  |                                       |                         |   |  |
| Malta            | 612% [3 UT]                       | 541% [3 UT]                      | 574% [3 UT]                        |   |                                     |  |   |  |                                       | 621% [3 UT]             |   | 472% [3 UT]                            |
| Netherlands      | 455% [8 UT]                       | 354% [8 UT]                      | 516% [8 UT]                        | 403% [5 UT]                             | 434% [7 UT]                         | 374% [5 UT]                              | 399% [5 UT]                             | 354% [5 UT]                            |                                       | 726% [6 UT]             | 589% [4 UT]                               | 643% [6 UT]                            |
| Norway           | 334% [3 UT]                       | 233% [3 UT]                      | 451% [3 UT]                        |   | 338% [3 UT]                         |  |   |  |                                       | 341% [3 UT]             |   | 240% [3 UT]                            |
| Poland           | 1431% [17 UT]                     | 1412% [17 UT]                    | 3418% [17 UT]                      | 1744% [7 UT]                            | 1450% [16 UT]                       | 1726% [9 UT]                             | 1744% [7 UT]                            | 1042% [15 UT]                          | 543% [12 UT]                          | 1435% [17 UT]           | 1021% [17 UT]                             | 1497% [14 UT]                          |
| Portugal         | 62% [11 UT]                       | 17% [11 UT]                      | 167% [11 UT]                       |   | 48% [10 UT]                         | 364% [7 UT]                              |   | 6% [8 UT]                              | 10% [4 UT]                            | 416% [9 UT]             | 358% [7 UT]                               | 450% [9 UT]                            |
| Romania          |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| Sweden           | 660% [10 UT]                      | 618% [10 UT]                     | 740% [10 UT]                       |   | 612% [10 UT]                        | 507% [3 UT]                              |   |  |                                       | 779% [8 UT]             |   | 655% [8 UT]                            |
| Slovenia         | 467% [4 UT]                       | 428% [4 UT]                      | 507% [4 UT]                        |   | 473% [4 UT]                         |  |   | 469% [4 UT]                            |                                       | 606% [3 UT]             |   | 576% [3 UT]                            |
| Slovakia         |                                   |                                  |                                    |   |                                     |  |   |  |                                       |                         |   |  |
| United Kingdom   | 325% [12 UT]                      | 295% [11 UT]                     | 359% [11 UT]                       | 328% [10 UT]                            | 328% [9 UT]                         | 267% [8 UT]                              | 259% [5 UT]                             | 347% [11 UT]                           | 340% [7 UT]                           | 359% [12 UT]            | 270% [9 UT]                               | 378% [11 UT]                           |

TABLE 21: MCR RATIOS BY SCENARIO FOR PARTICIPATING LIFE UNDERTAKINGS (NOT INCLUDING COMPOSITES)

| MCR Ratios       | Scenario 1<br>Baseline w/<br>LTGP | Scenario 2<br>Lower CCP<br>(50%) | Scenario 3<br>Higher CCP<br>(250%) | Scenario 4<br>Alternative<br>classic MA | Scenario 5<br>Longer<br>convergence | Scenario 6<br>Extended MA<br>Alternative | Scenario 7<br>Extended MA<br>Standard 2 | Scenario 8<br>Transitionals<br>existing | Scenario 9<br>Transitionals<br>paid-in | Scenario 10<br>end 2009 | Scenario 11<br>end 2004 +<br>Transitionals | Scenario 12<br>end 2004,<br>classic MA |
|------------------|-----------------------------------|----------------------------------|------------------------------------|---|-------------------------------------|--|---|---|--|-------------------------|--|--|
| Weighted average | 396% [273 UT]                     | 329% [251 UT]                    | 474% [266 UT]                      | 372% [63 UT]                            | 395% [234 UT]                       | 354% [175 UT]                            | 273% [69 UT]                            | 167% [174 UT]                           | 316% [47 UT]                           | 580% [172 UT]           | 243% [108 UT]                              | 574% [158 UT]                          |
| Austria          | 469% [19 UT]                      | 388% [19 UT]                     | 593% [19 UT]                       |   | 467% [18 UT]                        | 650% [5 UT]                              |   | 368% [9 UT]                             |  | 742% [4 UT]             | 508% [3 UT]                                | 621% [4 UT]                            |
| Belgium          | 238% [7 UT]                       | 200% [7 UT]                      | 341% [7 UT]                        |   | 234% [6 UT]                         | 315% [5 UT]                              |   |   |  | 422% [6 UT]             |  | 510% [6 UT]                            |
| Bulgaria         | 545% [3 UT]                       | 495% [3 UT]                      | 715% [3 UT]                        |   |                                     |  |   |   |  |                         |  |  |
| Cyprus           | 695% [7 UT]                       | 643% [7 UT]                      | 681% [7 UT]                        | 668% [3 UT]                             | 721% [4 UT]                         | 744% [5 UT]                              | 668% [3 UT]                             | 955% [5 UT]                             |  | 935% [5 UT]             | 914% [5 UT]                                | 962% [3 UT]                            |
| Germany          | 372% [46 UT]                      | 243% [35 UT]                     | 484% [46 UT]                       |   | 348% [43 UT]                        | 214% [42 UT]                             | 426% [8 UT]                             | 334% [43 UT]                            |  | 663% [22 UT]            | 193% [18 UT]                               | 552% [21 UT]                           |
| Denmark          | 1093% [10 UT]                     | 831% [10 UT]                     | 1178% [10 UT]                      | 924% [6 UT]                             | 1039% [10 UT]                       | 801% [7 UT]                              | 917% [6 UT]                             |   |  |                         |  |  |
| Estonia          | 910% [3 UT]                       | 863% [3 UT]                      | 884% [3 UT]                        |   | 883% [3 UT]                         |  |   |   |  |                         |  |  |
| Spain            | 201% [16 UT]                      | 172% [16 UT]                     | 260% [16 UT]                       | 194% [14 UT]                            | 192% [16 UT]                        | 259% [16 UT]                             | 185% [14 UT]                            | 257% [14 UT]                            | 253% [8 UT]                            | 391% [14 UT]            | 549% [11 UT]                               | 471% [14 UT]                           |
| Finland          | 472% [4 UT]                       | 425% [4 UT]                      | 535% [4 UT]                        | 506% [3 UT]                             | 476% [4 UT]                         | 509% [4 UT]                              | 476% [4 UT]                             | 494% [4 UT]                             | 459% [3 UT]                            | 750% [4 UT]             | 421% [4 UT]                                | 484% [3 UT]                            |
| France           | 388% [19 UT]                      | 320% [19 UT]                     | 474% [19 UT]                       |   | 381% [19 UT]                        | 406% [16 UT]                             |   | -117% [13 UT]                           |  | 577% [19 UT]            | -76% [10 UT]                               | 628% [18 UT]                           |
| Greece           | -92% [10 UT]                      | -148% [10 UT]                    | 21% [10 UT]                        |   | -224% [5 UT]                        | -68% [8 UT]                              |   | 3% [6 UT]                               |  | 364% [5 UT]             | 360% [5 UT]                                | 351% [4 UT]                            |
| Hungary          | 585% [10 UT]                      |                                  | 652% [10 UT]                       |   | 638% [10 UT]                        |  |   |   |  | 579% [3 UT]             |  | 523% [3 UT]                            |
| Ireland          |                                   |                                  |                                    |   |                                     |  |   |   |  |                         |  |  |
| Italy            | 328% [17 UT]                      | 279% [17 UT]                     | 392% [17 UT]                       | 301% [3 UT]                             | 398% [9 UT]                         | 468% [17 UT]                             | 143% [4 UT]                             | 13% [16 UT]                             | 340% [3 UT]                            | 649% [16 UT]            | 465% [4 UT]                                | 709% [16 UT]                           |
| Lichtenstein     | 351% [6 UT]                       | 346% [6 UT]                      |                                    |   |                                     |  |   |   |  |                         |  | 586% [3 UT]                            |
| Lithuania        | 592% [4 UT]                       | 519% [3 UT]                      | 620% [4 UT]                        |   | 513% [3 UT]                         |  |   |   |  | 563% [3 UT]             |  |  |
| Luxemburg        | 547% [5 UT]                       | 387% [4 UT]                      | 560% [5 UT]                        |   | 431% [4 UT]                         | 568% [4 UT]                              | 9% [3 UT]                               |   |  |                         |  |  |
| Malta            | 612% [3 UT]                       | 541% [3 UT]                      | 574% [3 UT]                        |   |                                     |  |   |   |  | 621% [3 UT]             |  | 472% [3 UT]                            |
| Netherlands      | 455% [8 UT]                       | 354% [8 UT]                      | 516% [8 UT]                        | 403% [5 UT]                             | 434% [7 UT]                         | 374% [5 UT]                              | 399% [5 UT]                             | 354% [5 UT]                             |  | 726% [6 UT]             | 589% [4 UT]                                | 643% [6 UT]                            |
| Norway           | 334% [3 UT]                       | 233% [3 UT]                      | 451% [3 UT]                        |   | 338% [3 UT]                         |  |   |   |  | 341% [3 UT]             |  | 240% [3 UT]                            |
| Poland           | 1431% [17 UT]                     | 1412% [17 UT]                    | 1418% [17 UT]                      | 1744% [7 UT]                            | 1450% [16 UT]                       | 1726% [9 UT]                             | 1744% [7 UT]                            | 1042% [15 UT]                           | 543% [12 UT]                           | 1435% [17 UT]           | 1021% [17 UT]                              | 1497% [14 UT]                          |
| Portugal         | 62% [11 UT]                       | 17% [11 UT]                      | 167% [11 UT]                       |   | 48% [10 UT]                         | 364% [7 UT]                              |   | 6% [8 UT]                               | 10% [4 UT]                             | 416% [9 UT]             | 358% [7 UT]                                | 450% [9 UT]                            |
| Romania          | 608% [3 UT]                       | 616% [3 UT]                      | 617% [3 UT]                        | 610% [3 UT]                             | 632% [3 UT]                         | 611% [3 UT]                              | 606% [3 UT]                             | 563% [3 UT]                             |  | 515% [3 UT]             |  |  |
| Sweden           | 670% [12 UT]                      | 629% [12 UT]                     | 749% [12 UT]                       |   | 622% [12 UT]                        | 507% [3 UT]                              |   | 435% [4 UT]                             |  | 800% [10 UT]            |  | 678% [10 UT]                           |
| Slovenia         | 467% [4 UT]                       | 428% [4 UT]                      | 507% [4 UT]                        |   | 473% [4 UT]                         |  |   | 469% [4 UT]                             |  | 606% [3 UT]             |  | 576% [3 UT]                            |
| Slovakia         | 807% [11 UT]                      | 773% [11 UT]                     | 876% [11 UT]                       |   | 790% [9 UT]                         | 742% [5 UT]                              |   |   |  |                         |  |  |
| United Kingdom   | 319% [13 UT]                      | 292% [12 UT]                     | 349% [12 UT]                       | 326% [11 UT]                            | 319% [10 UT]                        | 270% [9 UT]                              | 264% [6 UT]                             | 330% [12 UT]                            | 324% [8 UT]                            | 349% [13 UT]            | 316% [10 UT]                               | 398% [12 UT]                           |

TABLE 22: MCR RATIOS BY SCENARIO FOR PARTICIPATING LIFE UNDERTAKINGS (INCLUDING COMPOSITES)

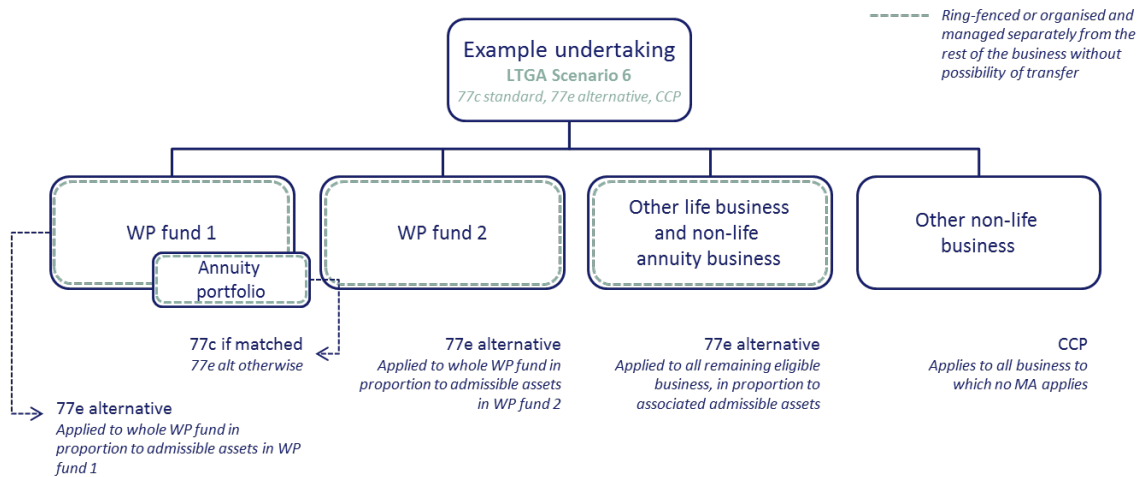
| Number of undertakings in the sample | Assets                             |                         |                         | SCR ratios                         |                         |                         | MCR ratios                         |                         |                         |               |
|--------------------------------------|------------------------------------|-------------------------|-------------------------|------------------------------------|-------------------------|-------------------------|------------------------------------|-------------------------|-------------------------|---------------|
|                                      | Scenario 1<br>Baseline<br>end 2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 | Scenario 1<br>Baseline end<br>2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 | Scenario 1<br>Baseline end<br>2011 | Scenario 10<br>end 2009 | Scenario 12<br>end 2004 |               |
| 273                                  |                                    |                         |                         |                                    |                         |                         |                                    |                         |                         |               |
| 172                                  |                                    |                         |                         |                                    |                         |                         |                                    |                         |                         |               |
| 158                                  |                                    |                         |                         |                                    |                         |                         |                                    |                         |                         |               |
| Reinsurance                          | 104,1                              | 89,4                    | 90,2                    | 131% [273 UT]                      | 186% [172 UT]           | 190% [158 UT]           | 396% [273 UT]                      | 580% [172 UT]           | 574% [158 UT]           |               |
| Investments                          | 2.941,5                            | 2.574,9                 | 2.551,3                 | 140% [19 UT]                       | 225% [4 UT]             | 190% [4 UT]             | 469% [19 UT]                       | 742% [4 UT]             | 621% [4 UT]             |               |
| Unit linked investments              | 655,7                              | 578,8                   | 556,5                   | 104% [7 UT]                        | 180% [6 UT]             | 232% [6 UT]             | 238% [7 UT]                        | 422% [6 UT]             | 510% [6 UT]             |               |
| Other                                | 508,1                              | 401,1                   | 398,9                   | 247% [3 UT]                        |                         |                         | 545% [3 UT]                        |                         |                         |               |
| <b>Total assets</b>                  | <b>4.209,5</b>                     | <b>3.644,2</b>          | <b>3.596,9</b>          | <b>202% [7 UT]</b>                 | <b>289% [5 UT]</b>      | <b>313% [3 UT]</b>      | <b>695% [7 UT]</b>                 | <b>935% [5 UT]</b>      | <b>962% [3 UT]</b>      |               |
| Liabilities                          |                                    |                         |                         |                                    |                         |                         |                                    |                         |                         |               |
| St. BE. St. insurance liabilities    | 3.483,1                            | 2.902,1                 | 2.894,4                 | 113% [46 UT]                       | 213% [22 UT]            | 204% [21 UT]            | 372% [46 UT]                       | 663% [22 UT]            | 552% [21 UT]            |               |
| LTG measures applied                 |                                    |                         |                         | 362% [10 UT]                       |                         |                         | 1093% [10 UT]                      |                         |                         |               |
| MA: Classic                          | 6,0%                               | 5,9%                    | 5,6%                    | 314% [3 UT]                        |                         |                         | 910% [3 UT]                        |                         |                         |               |
| MA: Extended                         | 2,6%                               | 2,7%                    | 3,0%                    | 91% [16 UT]                        | 163% [14 UT]            | 196% [14 UT]            | 201% [16 UT]                       | 391% [14 UT]            | 471% [14 UT]            |               |
| Transitional                         |                                    |                         |                         | 120% [4 UT]                        | 190% [4 UT]             | 124% [3 UT]             | 472% [4 UT]                        | 750% [4 UT]             | 484% [3 UT]             |               |
| CCP                                  | 73,2%                              | 74,4%                   |                         | 148% [19 UT]                       | 211% [19 UT]            | 243% [18 UT]            | 388% [19 UT]                       | 577% [19 UT]            | 628% [18 UT]            |               |
| None / not reported                  | 18,3%                              | 16,9%                   | 91,4%                   | Greece                             | -19% [10 UT]            | 111% [5 UT]             | 107% [4 UT]                        | -92% [10 UT]            | 364% [5 UT]             | 351% [4 UT]   |
| Risk margin                          | 76,1                               | 64,7                    | 62,0                    | Hungary                            | 193% [10 UT]            | 199% [3 UT]             | 174% [3 UT]                        | 585% [10 UT]            | 579% [3 UT]             | 523% [3 UT]   |
| Other                                | 335,3                              | 329,7                   | 316,4                   | Ireland                            |                         |                         |                                    |                         |                         |               |
| <b>Total liabilities</b>             | <b>3.894,4</b>                     | <b>3.296,5</b>          | <b>3.272,7</b>          | Italy                              | 132% [17 UT]            | 238% [16 UT]            | 265% [16 UT]                       | 328% [17 UT]            | 649% [16 UT]            | 709% [16 UT]  |
| <b>Assets less Liabilities</b>       | <b>315,1</b>                       | <b>347,7</b>            | <b>324,2</b>            | Lichtenstein                       | 141% [6 UT]             |                         |                                    | 351% [6 UT]             |                         |               |
| Solvency Capital Requirement         | 260,1                              | 199,8                   | 182,5                   | Lithuania                          | 229% [4 UT]             | 221% [3 UT]             | 245% [3 UT]                        | 592% [4 UT]             | 563% [3 UT]             | 586% [3 UT]   |
| Surplus                              | 80,3                               | 171,8                   | 164,4                   | Luxemburg                          | 203% [5 UT]             |                         |                                    | 547% [5 UT]             |                         |               |
| Solvency ratio                       | 131%                               | 186%                    | 190%                    | Malta                              | 206% [3 UT]             | 205% [3 UT]             | 201% [3 UT]                        | 612% [3 UT]             | 621% [3 UT]             | 472% [3 UT]   |
| Minimum Capital Requirement          | 80,6                               | 61,4                    | 57,8                    | Netherlands                        | 145% [8 UT]             | 202% [6 UT]             | 198% [6 UT]                        | 455% [8 UT]             | 726% [6 UT]             | 643% [6 UT]   |
| Surplus                              | 239,0                              | 294,8                   | 274,0                   | Norway                             | 125% [3 UT]             | 131% [3 UT]             | 96% [3 UT]                         | 334% [3 UT]             | 341% [3 UT]             | 240% [3 UT]   |
| Solvency ratio                       | 396%                               | 580%                    | 574%                    | Poland                             | 375% [17 UT]            | 376% [17 UT]            | 395% [14 UT]                       | 1431% [17 UT]           | 1435% [17 UT]           | 1497% [14 UT] |
|                                      |                                    |                         |                         | Portugal                           | 39% [11 UT]             | 126% [9 UT]             | 140% [9 UT]                        | 62% [11 UT]             | 416% [9 UT]             | 450% [9 UT]   |
|                                      |                                    |                         |                         | Romania                            | 238% [3 UT]             | 190% [3 UT]             |                                    | 608% [3 UT]             | 515% [3 UT]             |               |
|                                      |                                    |                         |                         | Sweden                             | 172% [12 UT]            | 204% [10 UT]            | 173% [10 UT]                       | 670% [12 UT]            | 800% [10 UT]            | 678% [10 UT]  |
|                                      |                                    |                         |                         | Slovenia                           | 156% [4 UT]             | 200% [3 UT]             | 195% [3 UT]                        | 467% [4 UT]             | 606% [3 UT]             | 576% [3 UT]   |
|                                      |                                    |                         |                         | Slovakia                           | 256% [11 UT]            |                         |                                    | 807% [11 UT]            |                         |               |
|                                      |                                    |                         |                         | United Kingdom                     | 90% [13 UT]             | 99% [13 UT]             | 110% [12 UT]                       | 319% [13 UT]            | 349% [13 UT]            | 398% [12 UT]  |

TABLE 23: COMPARISON OF BALANCE SHEETS AND CAPITAL RATIOS ACROSS REFERENCE DATES FOR PARTICIPATING LIFE UNDERTAKINGS (INCLUDING COMPOSITES)

### 9.7.4. Group aspects

Quantitative impacts on Group level have not been tested as part of the LTGA exercise.

However, the majority of participants indicated that there are particular issues with applying LTG measures at a group level. Complexities relate in particular to the application of more than adjustment to the risk-free rate. An example of such a situation is shown in the figure below, which indicates how the devices may be applied and the ring-fences that would then be required. The example does show a solo undertaking, but complexities tend to increase on group level.



**FIGURE 52: ILLUSTRATION OF GROUP LEVEL ASPECTS OF APPLYING DIFFERENT MEASURES**

In this example the following steps could be followed to organise the portfolio:

1. For with-profits (WP) funds eligible for EMA, application of the EMA should coincide with the current ring-fencing structure that would in any case apply to participating books of business where restrictions apply to the distribution of proceeds from backing assets.
2. If the “classical” matching adjustment can be applied to an annuity portfolio within a WP fund, a further ‘ring-fence’ will apply adding a new layer of restrictions to the diversification that may be allowed for within the fund according to the standard formula.
3. For the remaining non-profits business, assets need to be notionally assigned to either the business eligible for the extended MA, or the remainder. Restrictions to transfer will apply to the business to which the extended MA is applied. The CCP will apply to all other business in the group/ undertaking.

This allocation of the existing business to the various applicable measures may be complex, but will likely be a once-off exercise, after which the additional burden to the group is limited.

### 9.7.5. National market insights

As described above, the impact of certain tested measures varies significantly across Member States. Two of the tested measures, namely the “classical” MA and the transitional measure, were considered to be effective in some member states only (due to difficulties in technical implementation and the scope for application). While the CCP and the alternative EMAs were applied more broadly.

The less mature life insurance markets generally show higher resilience to the negative impacts of financial market volatility. This is also related to the nature of their products which provide comparatively less long-term guarantees.



### 9.7.6. Cross-border business

A general concern of the tested package is that a number of the LTG measures do not apply to cross-border business, most notably the MA and the transitional measure. Therefore, Member States with a high portion of cross-border business will see limited impact of those measures.

### 9.7.7. SII balance sheet volatility

Participants noted that the tested package helps to reduce the impact of short-term volatility on the Solvency II balance sheets. The CCP and the Matching Adjustment were considered to have the largest impact in this respect. However, both measures and the CCP in particular also raise concerns over a potential hiding of more structure issues.

## 9.8. Impact on competition

The concerns raised during the assessment with respect to competition distortions potentially triggered by the implementation of the LTG package mainly related to the following three aspects:

- Smaller vs larger market players: There is a general concern about the complexity of the LTG package providing an advantage to larger market players that have more resources and know-how to properly implement the measures. This issue could be overcome by significantly reducing the complexity and trying to avoid undertaking-specific measures to the extent possible;
- Life vs. non-life business: Some of the tested measures explicitly exclude non-life or reinsurance business. However, there seems no rationale behind some of these restrictions. Generally, the same characteristics of products should result in same treatment (e.g. non-life annuities should be treated the same way as life annuities if they meet the respective conditions of the measure in question);
- Domestic vs. cross-border business: Where a measure is undertaking specific or currency specific, there seems to be limited rationale behind excluding cross-border business from its application. The picture is different for national specific measures (e.g. nation CCP) which do create an arbitrage opportunity for cross-border business;
- Cross-sectoral effects: In the absence of appropriate LTG measures, insurance products with long-term guaranteed rates might suffer competitive disadvantages versus similar products offered by other players in the financial sector. However, theoretically this should only be true if risks are not reflected correctly in those other sectors or the risk appetite is calibrated differently.

## 9.9. Impact on Long Term Investments

Generally, the package does seem to encourage long-term liability business and thus also the holding of long-term assets.

Some of the measures even provide direct incentives for long-term investments, e.g. the level of CCP depends on duration of assets in the reference portfolio and the MA requires cash flow matching between assets and annuity-type liabilities.



On the other hand, participants have raised concerns around a potential indirect disincentive for long-term investments, e.g. through an extrapolation approach with a LLP that is perceived too close to the valuation date or by a transitional and other forbearance measures that might not incentivise undertakings to close asset liability mismatches for a certain period.

When looking at the impact of the package on certain types of long-term investments, it should be noted that the two measures which refer to asset restrictions (CCP, MA) do not explicitly exclude certain types of investments (e.g. infrastructure) as long as those assets are bond-like and in the case of the MA have predictable cash flows and a certain asset quality. In the technical specification for the LTGA, a more descriptive list of eligible assets was given for the Matching Adjustment for simplicity and consistency reasons only. This is, however, not expected to be retained going forward.

## 9.10. Other considerations

### *Negligence of Pillar 2 and 3 elements*

Most participants strongly advocated for a long-term guarantee package as part of the Solvency II framework. It is, however, also important to note that this package should have a more balanced approach using elements of all three Pillars of the SII framework. The tested package was strongly driven by Pillar 1 adjustments to the framework. All of those measures need to be accompanied by adequate Pillar 2 and 3 elements. The only Pillar 2 measure included in the tested package, namely the ERP, can be a very powerful tool to overcome “artificial” financial market volatility but also other types of crisis situations (e.g. a series of major catastrophic events) if some minor amendments are made to it.

### *Product availability*

One concern, mainly for industry participants, is the potential impact on the ability of undertakings to continue offering long-term guarantee products. In their view, the LTG package is vital to do so. EIOPA general supports this view, however, all products offered in the market will need to be sustainable and adequately priced with respect to options and guarantees.


## 9.11. Main technical findings on the LTG package

This section is split into four parts:

- A. EIOPA’s main observations on the LTG package as a whole;
- B. EIOPA’s technical advice on the LTG package as a whole (including an overview table);
- C. Highlights of the suggested Volatility Balancer;
- D. Details on the suggested Own Funds adjustment approach.

### *A. EIOPA’s main observations on the LTG package as a whole*

The main outcome of the exercise and technical assessment by EIOPA is listed below. It includes individual observations per tested measure and additional observations relating to the complexity of the LTG package as well as important single market and comparability aspects.



### *Counter-Cyclical Premium (CCP)*

While the tested CCP measure proved to be technically effective in terms of reducing the impact of short-term volatility on own funds of (re)insurers, it has two major draw-backs relating to the broader effectiveness and financial stability implications.

The first major draw-back is that the use of the CCP significantly increases the capital requirements of undertakings in a number of Member States, especially for higher levels of CCP, ultimately resulting in limited or even negative impact on the solvency ratios for those Member States.

The second major draw-back is related to the triggering process which needs to be effective on one hand and not create or deepen financial stability concerns on the other hand. Regarding the effectiveness, a smooth triggering process is vital for the measure to reduce the impact of short-term volatility. If such a process cannot be ensured, the measure could increase rather than decrease the impact of short-term volatility on (re)insurers' Solvency II balance sheets. It is very questionable whether EIOPA or National Supervisory Authorities will be able to really activate the application of a crisis measure such as the CCP in certain situations (e.g. sovereign crises). Indeed, this announcement might result in possible severe implications for financial market stability.

Thus, the tested CCP measure involving the given CCP risk methodology and the non-automated triggering does not seem suitable to adequately reduce the impact of short-term volatility in practice and is therefore unlikely to fulfil its overall financial stability aim.

### *Extrapolation*

EIOPA was asked to test the impact of different convergence speeds being a key input parameter to the Extrapolation approach. Analysis shows that for the Eurozone, a shorter convergence period generally results in more stability of technical provisions. However, compared to applying a longer convergence period and especially in times of high market volatility, this increases the volatility of own funds and thus of solvency ratios.

Another important aspect related to a shorter convergence period is the potential risk of not linking of the extrapolated part from financial market reality. This leads to a number of concerns with respect to the risk management of the undertakings (e.g. misevaluation of options and guarantees or potential risk of investing in shorter term assets to avoid volatility generated by differences between marked-to-market and marked-to-model data) and the consistency between regulatory processes (e.g. with respect to ORSA and internal models). The same could occur with a longer convergence, but generally to a much lesser extent.

Thus, the extrapolation approach for the Euro would benefit from an extension of the convergence period significantly beyond 10, for example 40 years. For other currencies, the characteristics of the local bond and swap markets must be taken into account when determining the appropriate convergence period including special considerations for currencies pegged to the Euro.

### *“Classical” Matching Adjustment*

The “classical” Matching Adjustment seems to be the most effective tool within the tested LTG package with regards to mitigating short-term volatility from the Solvency II balance sheets of portfolios eligible for the measure. This is due to the portfolio-tailored features of the measure which better reflect the economic reality of the business compared to other measures. However, in order not to risk major policyholder protection concerns and raise wrong risk management incentives, the measure needs to be designed with strict conditions to be met, both on the asset and the liability side.

EIOPA was asked to test two different options to the measure which differed in the strictness of the eligibility criteria for investments. The following two criteria were only applied to one of the tested options: the amount of credit quality step 3 (CQS 3) assets is limited to 33% of the portfolio (excluding government bonds); the matching adjustment for CQS 3 investments is capped at the maximum of CQS 1 or 2.

The quantitative assessment revealed that an exclusion of the two above criteria would significantly increase the amount of business eligible for the “classical” MA. On the other hand, such an approach does raise major concerns on risk management incentives and thus policyholder protection. Undertakings would be incentivised to hold instruments with higher spreads and thus higher default risk.

Further important observations on the functioning of the “classical” MA include:

The exclusion of immaterial mortality risk from the current measure does not seem to be proportional and reduces the attractiveness of eligible products for consumers;

In light of policyholder protection, the ring-fencing approach needs to be possible in practice for MA portfolios, e.g. undertakings need to have the possibility to manage the credit quality of MA portfolios in case of risk of downgrade;


The approach to determining fundamental spread levels of certain types of bonds must be prudent enough under current market conditions;

With regards to the MA cap for CQS 3 assets, undertakings might implement a broad variety of approaches to determine the cap which will lead to an inconsistent application of the measure across companies and markets;

No closed list of admissible types of assets should be defined (as was done for the LTGA), but rather suitable conditions in terms of predictability and ability to match liability cash flows;

The measure is relatively complex to implement and requires an intensive supervisory review process, but undertakings and supervisors in Member States where the measure is currently applicable consider this effort appropriate and supervisable.

Finally, though the applicability of the measure was limited to a number of Member States, EIOPA expects that eligible MA products will emerge in the near future in other Member States.



### *Extended matching adjustment*

Unlike the “classical” Matching Adjustment, the extended version raises significant concerns in terms of providing false risk management incentives, in particular in terms of credit quality of assets and with regards to the management of liquidity risk. This severely impacts the level of policyholder protection. These concerns are further increased by the high complexity of the measure’s calculations and implementation which would also require an extensive supervisory review process which is not seen as implementable by the majority of supervisors.

Based on clear indications from LTGA participants, the measure would, furthermore, create a competitive disadvantage for small and medium size undertakings as they might not be able to apply the adjustment due to its complexity.

### *Transitional Measures*

Transitional measures are not primarily aimed at reducing the volatility of the Solvency II balance sheet, but rather at providing a smooth transition between different regulatory regimes which would ultimately lead to more stability in the insurance sector. Therefore, EIOPA believes that transitional measures are important for a smooth transition.

By definition, this approach is aimed at providing a positive effect regarding policyholder protection (reducing risk of companies not being able to afford the transition) and financial stability. But it also comes with certain risks in both areas that, if appropriately designed, can be addressed. Right incentives must be provided (thus transitional measures should be preferred to grandfathering type of provisions) to undertakings and, to ensure policyholder protection a simple and transparent process must be provided, reinforced with an enhanced supervisory review process (SRP). This includes an appropriate length of the period of applicability, and full transparency regarding the consequences of such application.

The transitional tool tested effectively addresses the issue of the technical provisions gap for certain types of businesses with long-term guarantees. The specific design generally limits the application to some Member States where such products are offered or have been offered. However, the general issue of gaps in technical provisions due to the inception of Solvency II will most likely also exist in other Member States for different reasons, e.g. the implementation of the risk margin, revised contract boundaries or differently calibrated market-consistent risk-free rate curves. Also for this a suitable transitional should be found.

A relevant issue to consider is linked to the underlying nature of transitional measures: they should focus on the value of the promise made under Solvency I (technical provisions) and how to align it with the market consistent valuation of Solvency II that adequately prices options and guarantees, therefore not affecting the capital requirements. The way to do it, in EIOPA’s view, would be a pure adjustment of eligible own funds which reduces over time.

### *Extension of the Recovery Period*

The extension of the recovery period (ERP) can be a powerful tool in crisis periods, showing how time can be used, via management and supervisory action, in the benefit of both policyholders and financial stability. At the same time, to ensure right incentives

are embedded, time cannot be seen as an excuse to postpone action by undertakings in order to restore the situation. As it is the case within Pillar 2 related action, not only capital but other measures can be part of the agreed way forward.

One difference of this measure compared to the CCP, both being designed as crisis tools, is that it can be applied for different types of financial market crises, i.e. not just spread-related crises. However, it should be noted that the current design (steep fall in financial markets) would probably not provide supervisors with the option to apply it in a low interest rate crisis which is one of the key threats to long-term guarantee business.

The proposed length of the extension (i.e. up to 7 years) should be a maximum. While the duration of liabilities should play a role in activating the measure, the strict and sole link of the granted length of extension to the duration of liabilities seems too simple given the multitude of factors that determines the decision for an application of the measure. Nevertheless, there should be clear conditions linked to the length of application in order to ensure a consistent application across Member States and undertakings.

#### *Complexity*

The tested LTG package has shown to be highly complex for undertakings and supervisors to implement for this assessment. This complexity is caused by several factors, most notably the number of measures tested, their interaction, the amount of undertaking-specific elements, and the complex technical approaches to calculating the impact of Pillar 1 measures.

Regarding the latter, all tested LTG measures which involve an adjustment to the risk-free rate (apart from the extrapolation) require the undertakings to calculate an economic balance sheet and capital requirements with the adjustments to the risk-free rate. Once the framework is in place, undertakings would additionally need to do these calculations for the unadjusted rate as well for disclosure purposes. This results in a specifically high effort and complexity if more than one of these measures apply within an undertaking.

For the LTGA, therefore, undertakings theoretically needed to perform separate balance sheet and capital requirement calculations for each scenario and within each scenario for each of the measures applied. While this is useful and relatively straight forward for ring-fenced portfolios that apply the MA, it seems less so for the CCP and transitional measures. Risk-free rate adjustments relating to both these measures do not directly reflect the economic reality of the undertaking or portfolio in question. It is therefore questionable whether the very complex approach to determine the impact of these measures is proportionate and adds value.

#### *Single market and consistency*

Several measures in the tested LTG package represent Member State options and explicitly excluded cross-border business from their application. Furthermore, non-life and reinsurance business is explicitly excluded from the application of selected measures, e.g. the MA.

These exclusions do not seem to be based on technical or prudential reasons where the application conditions are otherwise met.

## B. EIOPA's technical advice on the LTG package as a whole

### *General principles to the package*

The final LTG package to be included in the Solvency II framework should fulfil a number of principles in order to ensure a sufficient degree of policyholder protection as well as effective supervisory processes. Those principles include: (a) Alignment with the SII framework and the economic balance sheet concept; (b) Full transparency and comparability; (c) Efficient linking of all 3 Pillars; (d) Proportionality and simplicity; and (e) Adequate treatment of transitional issues.

### *Way forward*

Based on the conducted assessment and the outlined principles, EIOPA would like to present the following advice with regards to the regulatory LTG measures to be included in the Solvency II framework:

Counter-Cyclical Premium: Based on the outlined concerns relating to the effectiveness of this crisis measure and to potential financial stability considerations, EIOPA advises to replace the CCP with a predictable volatility adjustment mechanism. Further details on this proposal are given below.

Extrapolation: Based on the outlined considerations relating to the effectiveness and implications for risk management as well as regulatory processes, EIOPA advises to select a convergence period that is significantly longer than 10 years (e.g. 40 years). Furthermore, in order to reduce potential unwanted consequences of the parameter choice for extrapolation, dedicated Pillar 2 measures such as sensitivity analysis should be applied.

"Classical" Matching Adjustment: Based on the outlined considerations relating to risk management incentives and policyholder protection, EIOPA advises to implement the "classical" MA as foreseen by the legislators, including the strict criteria relating to CQS 3 investments (i.e. the 33% portfolio limit excluding government bonds and the MA cap). Furthermore, EIOPA suggests the following amendments to the measure: the inclusion of immaterial mortality risk; the ability to manage the credit quality of the asset portfolio in case of risk of downgrade; maximum levels of MA for CQS 3 investment to be provided by EIOPA; and EIOPA shall provide with appropriate criteria and conditions via guidelines to deal with "cliff effect situations" related to necessary requirements set in terms of assets quality.

Extended Matching Adjustment: Based on the outlined major concerns with regards to policyholder protection, competition and supervisability, EIOPA advises to exclude the Extended Matching Adjustment from the LTG package.

Transitional measures: Based on the outlined observations, EIOPA advises to implement transitional measures as part of the LTG package. In order to make these measures available for a broader application, EIOPA also advises to complement the tested measure with a second measure that is able to address further issues also related to the different valuation of technical provisions under Solvency I versus Solvency II. Both approaches follow the principles defined by EIOPA and need to be accompanied by strong supervisory review elements. Section 10.2 contains an initial impact assessment.



Extension of the Recovery Period: Based on the outlined considerations, EIOPA advises to implement the Extension of the Recovery Period, under criteria set by EIOPA. However, the strict and sole link of the length of extension to the duration of liabilities seems too simple given the multitude of factors that determine the decision for the application of the measure. Furthermore, the proposed maximum length of extension needs further review, but should not go beyond the currently proposed 7 years. EIOPA also advises to consider a broadening of the triggers to the measure which would enable an application in crisis situations that are not directly linked to a steep fall in financial markets, e.g. low interest rate crisis or even a combination of major insurance risk events. The measure needs to be accompanied by a supervisory process that closely tracks progress on recovery plans. Finally, the interaction with other LTG measures needs to be clearly defined once the LTG package is final.

Complexity: Based on the observations relating to the technical complexity of calculating the impact of risk-free rate adjustments, EIOPA advises to implement a more simple approach which solely adds a "Special" Own Funds item to the economic balance sheet for adjustments not directly reflecting the economic reality of the undertaking or portfolio. Apart from this item, the economic balance sheet does remain unchanged from the calculation with the non-adjusted rate and the capital requirements would equally remain unchanged. Section 9.11 provides further details on the proposed OF adjustment approach.

Single market and consistency: Based on the observations regarding the inconsistent application of certain LTG measures across the EU, EIOPA advises not to link the LTG measures to Member State options and to not exclude cross-border business from any measure (apart from the exceptional national top-up to the Volatility Balancer). Furthermore, the principle of substance over form should be fully incorporated in the LTG package, i.e. the legal type of business should not be an eligibility criteria for any LTG measure.

Finally, EIOPA fully supports to publicly disclose the impact of all LTG measures on the solvency position of individual undertakings after the implementation of the package. For the extrapolation, were a disclosure of impact seems less useful, this should be replaced by the results of sensitivity analyses<sup>14</sup>.

It should also be noted that a precondition for the appropriate functioning of the entire package is the proper interaction of all three pillars, with a strong coordination at EU level. A clear understanding of the consequences in the management of the business is requested, and there should be room for action at supervisory level in terms of Pillar 2.

Please also note that following overview table summarising EIOPA's advice on the LTG package.

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<sup>14</sup> This does not give rise to new Pillar 2 requirements, but can be incorporated as part of the sensitivity analyses required in the existing Pillar 2 framework.



| Main Features                   | Volatility Balancer (VB)   | Matching Adjustment (MA)   | Dynamic Transitional (DTrans)   | Static Transitional (STrans)  | Extrapolation   | Extension of the Recovery period  |
|---------------------------------|--|--|---|---|---|---|
| <b>Objective</b>                | Volatility dampener  | Volatility dampener  | Smoothing tool for LGT business with high SI discount rates                           | Smoothing tool for business with a high TP delta SI vs SII                        | Heightening the market-consistency of the discount curve      | Countercyclical/ crisis instrument  |
| <b>Nature of the adjustment</b> | Premium on the discount curve; may turn negative under certain conditions                | Premium on the discount curve; may turn negative under certain conditions                | Premium tied to the delta SI rate/SII rate on the discount curve decreasing over time | Neutralization of the delta TP between SI/SII decreasing over time                | Lower convergence speed/ longer convergence period to the UFR | Extension of the granted period of to restore SCR coverage                            |
| <b>Activation</b>               | Permanent, predictable and automatic   | Permanent, predictable and automatic   | Temporary: maximum length to be decide as part of Pillar 2                            | Temporary: maximum length to be decide as part of Pillar 2                        | Permanent   | Triggering  |
| <b>Calibration</b>              | Normally, currency-specific with temporary national add-ons                              | Undertaking-specific   | Undertaking-specific  | Undertaking-specific  | Specific to the Euro curve                                    | Undertaking-specific, but market-specific activation                                  |
| <b>Application on Own Funds</b> | Own Funds  | Discount curve   | Own Funds   | Own Funds   | Discount curve  | N/A (Pillar 2)  |
| <b>Impact on SCR</b>            | No   | Yes  | No  | No  | Indirectly  | N/A (Pillar 2)  |
| <b>Public disclosure</b>        | Disclosure of the OF adjustment  | Disclosure of solvency positions with & without MA                                       | Disclosure of the OF adjustment   | Disclosure of the OF adjustment   | No, but Pillar 2 sensitivities envisaged                      | Declaration of an exceptional market conditions                                       |
| <b>Combination of measures</b>  | With MA: not on the same obligations; With transitional: subject to supervisory approval | With VB: not on the same obligations; With transitional: subject to supervisory approval | With VB or MA: subject to supervisory approval; With STrans 1: no                     | With VB or MA: subject to supervisory approval; With DTrans 1: no                 | With all LTG measures   | To be defined after the finalisation of the LTG package                               |
| <b>Optionality</b>              | No MS option; undertaking option   | No MS option; undertaking option   | No MS option; undertaking option  | No MS option; undertaking option  | N/A   | Indirect MS option (due to activation)  |
| <b>Scope</b>                    | All (re)insurance business; x-border excluded for national add-on                        | All (re)insurance business meeting the criteria (including non-life and x-border)        | All (re)insurance business meeting the criteria (including non-life and x-border)     | All (re)insurance business meeting the criteria (including non-life and x-border) | All (re)insurance business                                    | All (re)insurance business meeting the criteria (not limited to durations > 12 years) |
| <b>Supervisory approval</b>     | No   | Yes  | Yes   | Yes   | No  | Yes   |
| <b>Specific features</b>        | None   | Strict criteria on eligible portfolios with regards to ALM, etc.                         | Restricted to business inforce at SII inception                                       | Restricted to business inforce at SII inception                                   | None  | Length of extension depending on external and undertaking-specific criteria           |

TABLE 24: OVERVIEW OF PROPOSED EIOPA PACKAGE



### C. Highlights of the suggested Volatility Balancer

#### General functioning

EIOPA advises to replace the CCP with a predictable volatility adjustment mechanism. The proposed measure named “Volatility Balancer” would be based on the following premises:

- It would be designed to deal in a predictable and permanent way with the unintended consequences of volatility;
- It would be simple, supervisable and comparable, applicable to all insurance business except unit-linked (and unless the business applies MA);
- It would be calculated as a predictable adjustment to the relevant risk-free rate, usually calculated at a currency level to deal with competition distortions within the single market, but with a national top-up in exceptional market circumstances;
- It would affect own funds only via the introduction of a “Special” Own Funds item;
- It would be reviewed after a given period of time in line with the remainder of the LTG package (currently foreseen after 7 years);
- It might turn negative under certain conditions; however, this will depend on the final calibrations of the device.

In more detail, the Volatility Balancer (VB) would function as follows:

- A currency-specific reference portfolio (e.g. as obtained for the CCP in the context of the LTGA) would be used as basis to determine the spread difference to the relevant risk-free rate less the portion related to default risk;
- In exceptional circumstances, this adjustment may not reflect the reality of a given market. Should this be the case, e.g. the spread of a national reference portfolio would exceed two times the spread of the currency specific reference portfolio and this national spread is at least 100 bps, the spread would be additionally adjusted for that market by adding the amount that the national spread exceeds two times the currency spread (i.e. if the currency spread is 80 bps and the national spread is 200 bps, the spread would be adjusted to  $80 \text{ bps} + (200 - 2 \cdot 80) \text{ bps} = 120 \text{ bps}$ . This additional adjustment would then be applicable to national business only to avoid competition advantages in cross border operations;
- The calculated spread (already excluding the portion linked to default risk) would need to be adjusted to account for risk associated with the implementation of the adjustment, i.e. there will not be a full application of the determined spread, but only a 20% application;
- The impact of the measure would be determined using the own funds adjustment approach.

The above calibration of the tool should be seen as a reference calibration. Further analysis needs to go into final calibrations of the approach.

Section 10.1 provides an impact analysis with regards to the Volatility Balancer and the proposed reference calibrations for all Member States that have participated in the LTGA.



### *Rationale for the 20% calibration*

The criticism on the SCR arising from the application of the CCP was based on the non-linear increase of the capital charge for higher CCP levels. To correct this, while at the same time taking into account the risks associated to the implementation of the adjustment, it is proposed to review the calibration of the premium. The calibration of the Volatility Balancer would thus be reduced in compensation of the removal of the SCR CCP sub-module. The main advantage of capturing the risks directly through the calibration rather than via a SCR is to avoid non-linear effects that may largely offset in some cases the benefit of the measure.

The main risk associated to the implementation of the measure is certainly an overestimation of the “artificial volatility” affecting spreads. The total spread between the yield of an asset and the risk-free rate includes in fact many components. The current calibration of the CCP only recognizes the credit risk connected with the probability of default, the volatility of this probability and the cost of downgrades. Beyond credit risk, the spread also encompasses crucial information such as management expense risk, taxes or costs of market imperfections. In addition, since the “buy-and-hold” principle is not a prerequisite to earn the Volatility Balancer and given that insurance liabilities are not required to be illiquid, the liquidity risk is a component of the spread to consider for the calibration. Therefore the calculated spread, which currently only excludes the portion linked to default risk (based on CCP methodology), would need to be adjusted to account for other objective market parameters of the spread.

EIOPA's analysis tends to show that 20% of the actual currency CCP would have a similar impact on the SCR coverage ratio at YE11 than the tested CCP mechanism to which a dedicated capital charge is attached. This seems, therefore, a good starting point for further calibration work on the Volatility Balancer. It is to be noted that a 20% application of the calibrated spread would have an effective linear impact on the coverage ratio – contrary to the former SCR charge for CCP –.

### *Final calibration and impact analysis*

The above calibration of the tool should be seen as a reference calibration. Further analysis needs to go into final calibrations of the approach.

Please note that Section 10.1 provides an impact analysis with regards to the Volatility Balancer and the proposed reference calibrations for all Member States that have participated in the LTGA.

## ***D. Details on the suggested Own Funds adjustment approach***

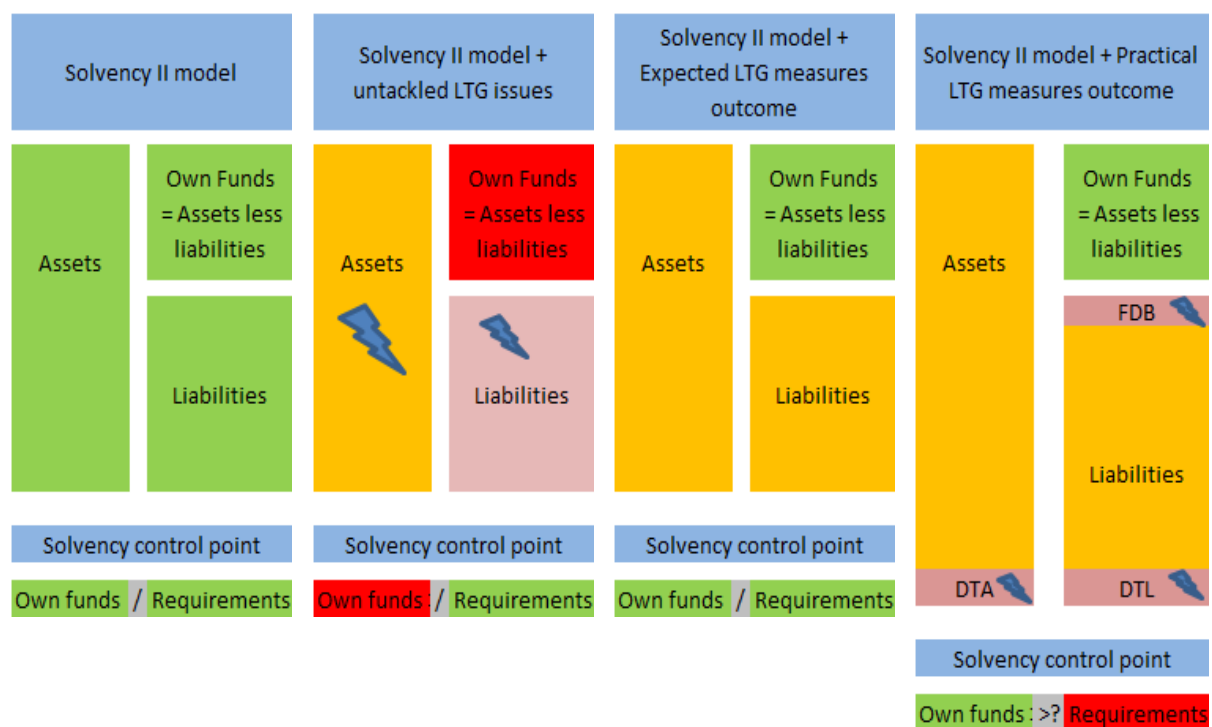
### *Rationales for this approach*

While the quantitative results presented in this report show that the tested devices can have a significant effect in addressing the issues faced by long term guarantees, the practical exercise has shown that some of them in their current shape can bring in the system a significant added level of complexity which may thus be challenging to implement and would increase the difficulty of the supervisor's work as well as diminish the transparency and comparability of disclosed market information. Negative side effects have also been uncovered in the asymmetric capital adjustment of the discount rate and in the conflicting risk management incentives, as well as some remaining

technical challenges to implement the two legs on which the Solvency II is build – namely the valuation and the risk assessment.

*Tested approach is complex and provides distorted picture*

The following figure explains the conceptual model underlining the measures in question, i.e. Transitional and CCP respectively Volatility Balancer. In order to ensure the policyholder level of protection required by the directive, both an appropriate determination of the requirements and the eligible own funds should exists. Untackled LTG issues, by impairing the eligible prudential own funds would not reach this overarching goal. By adjusting liabilities, the goal was to restore a level of own funds in line with the solvency expectation.



**FIGURE 53: ILLUSTRATION OF FUNCTIONING OF TESTED LTG MEASURES ON DIFFERENT BALANCE SHEET ITEMS AND SOLVENCY POSITION**

In practice, the shown approach revealed a number of issues which, overall means that the determination of the appropriate capital requirement becomes difficult with the existing design of the standard formula, thus impairing the compliance with the level of policyholder protection required by the directive.

*Spill-over effect and tested ways to mitigate these*

The first difficulty is the spill-over issue. Re-valuing the technical provisions lead to a re-valuation of the deferred taxes position<sup>15</sup> (DTA for assets or DTL for liabilities in the figure) – a natural consequence of the revaluation of the technical provisions made - and the level of future discretionary benefits<sup>16</sup> (FDB in the figure) – a consequence of the

<sup>15</sup> E.g. +188% for the scenario in which the adjustment was on the yield curve was 250 bps compared to the scenario in which the adjustment was 50 bps.

<sup>16</sup> E.g. +88% for the scenario in which the adjustment was on the yield curve was 250 bps compared to the scenario in which the adjustment was 50 bps.



asset-liability management done by undertakings. In the determination of the capital requirements, these elements (DTA, DTL, FDB) are considered as risk mitigating or risk covering elements, on a global basis, covering all risks. So in effect, only re-valuing the technical provisions would lead to a decrease of the capital requirements, without distinguishing between risks or business books.

Two ways to overcome this issue have been tested in the LTG measure. The first way is the ring fencing of liabilities subject to a given measure (tested as part of the Matching Adjustment device). This effectively allows avoiding the spill-over effect of the top level adjustment in the standard formula, but at the price of simultaneously losing the diversification benefits of the underlying risks, and increasing the reporting requirements.

The second way is the creation of a specific risk in the standard formula to counterbalance these effects. This was the aim of the CCP risk, as tested in some scenarios. It created two undesired side-effect: the disconnection of the evolution of the two classical solvency measures. Going from the simulation of a CCP level of 50 basis point to the simulation of a CCP level of 250 basis point, the level of eligible own funds augmented by 36%, while the coverage ratio increase by 23%. This difference comes not only from the CCP risk<sup>17</sup>, but also from a simultaneous re-valuation by almost 50% of the lapse risk, a risk included in the underwriting risk and supposed to be, at atomic level, modelled independently of the market risk. This present a particular technical challenge for any attempt to design a measure which wouldn't distort the regulatory perception of the risk profile based on the standard formula while at the same time still producing the capital requirement at the level set in the directive.

This distortion of the reported risk profile is not only a technical design challenge for the standard formula, but indeed a symptom of a more in-depth Pillar 2 issue: undertakings have aligned their risk management assumption on the adjusted model whose purpose was shifted from the initial "bottom-up" granular risk based measure to the neutralisation in a "top-down" way of the overall side-effect brought on the risk assessment by the adjustment made in the valuation. To give another example of the undesired side-effect discovered, a number of undertakings have reported an inversion of the computed sensitivity of their balance sheet between a rise and a fall of the interest rate with a high level of the CCP. With otherwise identical market conditions, undertakings following this distorted view of their risk profile (thus applying the "use test" principle) would be incentivized to switch their risk hedging strategy.

#### *OF adjustment approach overcomes the issues*

To overcome the undesired side effects of changes made on the discounting of technical provisions, a third way, not tested in the LTG package, would be to assess the extent of own fund adjustment needed to bring back the solvency assessment in line with supervisory objectives and Solvency II requirements, and to apply it directly on the only element needing to be adjusted (the Own Funds), thus avoiding a lot of the complexity and perverse risk management incentives brought by the complexity of the measure tested, namely CCP and the transitional measure.

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<sup>17</sup> A risk classified in the Market risk module

The classification of the “Special” OF items remains to be defined. However, an unrestricted nature of the item would have a number of advantages.

This focused approach is depicted in the following figure.

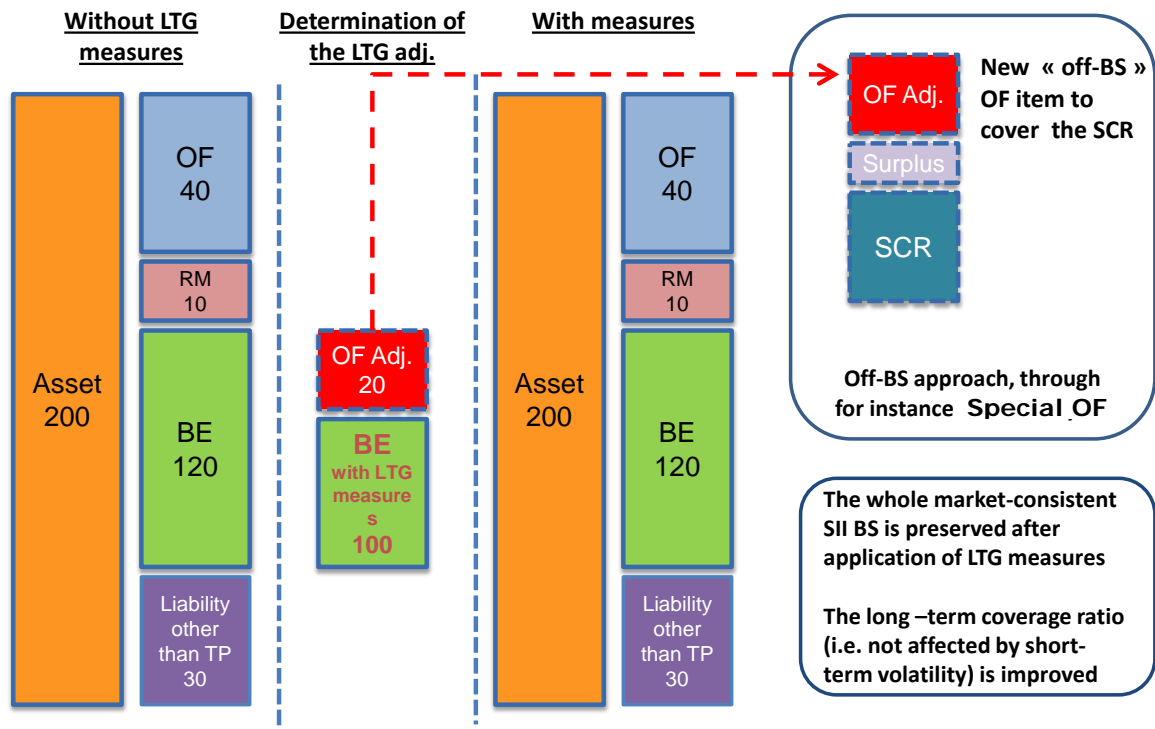


FIGURE 54: ILLUSTRATION OF OWN FUNDS ADJUSTMENT APPROACH



## 10. Impact assessment of EIOPA's recommendation

This section presents an impact assessment of the possible way forward suggested by EIOPA for elements of EIOPA's advice that differ from the tested approaches. Therefore, this section focuses on the impact following three topics:

1. Impact of the Volatility Balancer (using the OF adjustment approach)
2. Impact of the Transitional measures (using the OF adjustment approach)
3. Impact of the inclusion of immaterial mortality risk for the MA

Most of this section will focus on the quantitative impact of the measures. Other impact considerations with a more qualitative focus can be found in the respective sections of the report linking to CCP (section 3), MA (section 5) and Transitional measures (section 7).

***Disclaimer: It should be noted that the impact analysis provided in this section is partially based on assumptions made by EIOPA or NSA experts, especially for the impact analysis relating to the Volatility Balancer. The assumptions that needed to be made are clearly referenced in all instances. In cases where no or only very minor additional assumptions have been made, this will also be clearly referenced.***

### 10.1. Impact of the Volatility Balancer

#### *Recap of EIOPA's advice on the Volatility Balancer*

EIOPA advises to replace the CCP with a permanent and predictable volatility adjustment mechanism. The proposed additional measure to the package would function as follows:

- A currency-specific reference portfolio (e.g. as obtained for the CCP in the context of the LTGA) would be used as basis to determine the spread difference to the relevant risk-free rate less the portion related to default risk;
- In exceptional circumstances, this adjustment may not reflect the reality of a given market. Should this be the case, e.g. the spread of a national reference portfolio would exceed two times the spread of the currency specific reference portfolio and this national spread is at least 100 bps, the spread would be additionally adjusted for that market by adding the amount that the national spread exceeds two times the currency spread (i.e. if the currency spread is 80 bps and the national spread is 200 bps, the spread would be adjusted to 80 bps +  $(200 - 2 \times 80)$  bps = 120 bps. This additional adjustment would then be applicable to national business only to avoid competition advantages in cross border operations;
- The calculated spread (already excluding the portion linked to default risk) would need to be adjusted to account for risk associated with the implementation of the adjustment, i.e. there will not be a full application of the determined spread, but only a 20% application;
- The impact of the measure would be determined using the own funds adjustment approach.

**The above calibration of the tool should be seen as a reference calibration chosen for the purpose of this impact assessment. Further analysis needs to go into final calibrations of the approach.**

Rationales for the reference calibration are given in section 9.11.

### **Approach chosen for this impact assessment**

This section presents an impact assessment of the possible way forward suggested by EIOPA. The way forward – either in the form of a Volatility Balancer (VB) or a CCP – relies on currency and country level monitoring of the markets and reacting in appropriate ways to abnormal observations. These options differ in their predictability for market participants (supervisory decision or formula driven triggering) and length of application (crisis tool or volatility balancer). They also differs in the way they propagate to the eligible own funds.

To a certain extent, the Volatility Balancer could be understood as an entity-wide stabilizer based on market wide observations. The level of artificial distress at end 2011 which would have needed to be neutralized to reach a robust solvency assessment from a supervisory point of view is based on the findings of the analysis done to estimate the national and currency CCP (see section 3), reduced by 80% to account for risks associated with the implementation of the adjustment and in the absence of a SCR element covering this risk.

On a YE11 basis, the country level spreads found present a high dispersion. This allows for simulating how a second level country specific layer could have worked under the Volatility Balancer approach. For the purpose of this impact assessment, the criterion retained was to offset the effect of national based spread when higher than twice the currency based one. On a YE04 basis, the effect of the Volatility Balancer would have been minimal with at most a few basis points to offset, due to a very low level of artificial distress in the markets. On an SCR coverage basis, the effect of the Volatility Balancer would have been overall an increase of 2 percentage points. The YE09 situation lies in between, with a computed Volatility Balancer but almost no triggering of the country specific layer.

The following table presents the volatility balancer levels used for this impact assessment. It also gives the levels on a YE12 basis, which are lower in almost all the studied countries than the 2011 one.

| Level applied (in bps) | Permanent VB (Currency based) |      |      |      | VB + country layer |      |      |      |
|------------------------|-------------------------------|------|------|------|--------------------|------|------|------|
|                        | Country                       | 2012 | 2011 | 2009 | 2004               | 2012 | 2011 | 2009 |
| <b>AT</b>              | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| <b>BE</b>              | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| <b>BG</b>              | 2                             | 4    | 4    | -    | 4                  | 19   | 4    | -    |
| <b>CY</b>              | 13                            | 25   | 6    | 1    | 53                 | 129  | 13   | 1    |
| <b>DK</b>              | 4                             | 9    | 6    | 1    | 4                  | 9    | 6    | 1    |
| <b>EE</b>              | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| <b>FI</b>              | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| <b>FR</b>              | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |



| Level applied (in bps) | Permanent VB (Currency based) |      |      |      | VB + country layer |      |      |      |
|------------------------|-------------------------------|------|------|------|--------------------|------|------|------|
|                        | Country                       | 2012 | 2011 | 2009 | 2004               | 2012 | 2011 | 2009 |
| DE                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| GR                     | 13                            | 25   | 6    | 1    | 32                 | 212  | 6    | 1    |
| HU                     | 16                            | 35   | 4    | 3    | 16                 | 35   | 4    | 3    |
| IE                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| IT                     | 13                            | 25   | 6    | 1    | 27                 | 46   | 6    | 1    |
| LI                     | 4                             | 5    | 0    | -    | 5                  | 6    | 2    | -    |
| LT                     | 50                            | 44   | 2    | -    | 50                 | 44   | 2    | 0    |
| LU                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| MT                     | 13                            | 25   | 6    | 1    | 13                 | 48   | 6    | 1    |
| NL                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| NO                     | 18                            | 22   | 14   | 4    | 18                 | 22   | 14   | 4    |
| PL                     | 2                             | 3    | 3    | 3    | 2                  | 3    | 3    | 3    |
| PT                     | 13                            | 25   | 6    | 1    | 13                 | 61   | 6    | 1    |
| RO                     | 24                            | 35   | 25   | -    | 24                 | 35   | 25   | -    |
| SK                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| SI                     | 13                            | 25   | 6    | 1    | 13                 | 25   | 6    | 1    |
| ES                     | 13                            | 25   | 6    | 1    | 25                 | 25   | 6    | 1    |
| SE                     | 9                             | 11   | 4    | 2    | 9                  | 11   | 4    | 2    |
| UK                     | 13                            | 17   | 13   | 4    | 13                 | 17   | 13   | 4    |

TABLE 25: LEVELS OF VB USED FOR THIS IMPACT ASSESSMENT (IN BPS)

### Impact analysis for YE11, YE09 and YE04

The following tables present the result of the impact assessment done. It should be stressed that the provided results are not a straightforward restitution of information communicated by participating undertakings, but on a joint modeling<sup>18</sup> of the dynamics of the balance sheet and capital requirements applied on the detailed information provided by participants. The LTGA having been run on a best effort basis with some scope for simplification, hence not all information collected could be used. The usable data on which the following is build cover roughly 75%<sup>19</sup> to 80% of the available data on an end 2011 basis.

The results on a YE11 basis are presented in the following two tables, first for the full sample used, and then for the sub-sample whose main business is life business.

The first column presents the sample size followed by the reported result under the base scenario of the LTG (Scenario 1).<sup>20</sup> The following columns present the SCR ratio and

<sup>18</sup> Assuming a linear relationship between the net technical provisions (without future discretionary benefits) and the level of the adjustment, a different linear relationship between the future discretionary benefits and the level of adjustment, a third linear relationship between the lapse risk and the level of adjustment and using the interest rate risks from scenario 2, and the average tax rate reported in the scenarios.

<sup>19</sup> In terms of risks covered, or eligible own funds.

<sup>20</sup> It should be noted that the scenario 1 set-up might not be the optimal starting point for an impact assessment for selected member states (e.g. IT), however, applying scenario 0 as a starting point is also not

surplus under the VB approach, first using the currency level and then the currency + country (when applicable) level. On a full sample basis, the overall impact of the VB on SCR ratios is higher than the base scenario, it moves from 143% on Scenario 1 basis to 149% for the VB on a currency basis, or 150% taking into account the country layer.

| End 2011 VB - All business |     |                           |               |         |                    |         |              |
|----------------------------|-----|---------------------------|---------------|---------|--------------------|---------|--------------|
| Country                    | #   | Reported (scen1 - 100bps) | VB (Currency) | Surplus | VB + country layer | Surplus | # < 100% SCR |
| EU                         | 297 | 143%                      | 149%          | 127,0   | 150%               | 130,0   | 77           |
| AT                         | 21  | 138%                      | 165%          | 4,3     | 165%               | 4,3     |              |
| BE                         | 7   | 104%                      | 149%          | 3,7     | 149%               | 3,7     |              |
| BG                         | 2   | -                         | -             | -       | -                  | -       |              |
| CY                         | 9   | 177%                      | 188%          | 0,2     | 205%               | 0,2     |              |
| DK                         | 8   | 354%                      | 201%          | 3,9     | 201%               | 3,9     |              |
| EE                         | 3   | 314%                      | 301%          | 0,1     | 301%               | 0,1     |              |
| FI                         | 7   | 146%                      | 139%          | 1,7     | 139%               | 1,7     |              |
| FR                         | 30  | 145%                      | 148%          | 26,0    | 148%               | 26,0    |              |
| DE                         | 53  | 151%                      | 152%          | 30,7    | 152%               | 30,7    |              |
| GR                         | 12  | -9%                       | -26%          | -1,9    | 24%                | -1,2    |              |
| IE                         | 4   | 86%                       | 82%           | -0,8    | 82%                | -0,8    |              |
| IT                         | 17  | 132%                      | 158%          | 12,9    | 167%               | 14,9    |              |
| LI                         | 0   | -                         | -             | -       | -                  | -       |              |
| LT                         | 3   | 217%                      | 258%          | 0,1     | 258%               | 0,1     |              |
| LU                         | 5   | 145%                      | 136%          | 0,8     | 136%               | 0,8     |              |
| MT                         | 3   | 206%                      | 230%          | 0,1     | 240%               | 0,1     |              |
| NL                         | 13  | 143%                      | 196%          | 11,9    | 196%               | 11,9    |              |
| NO                         | 1   | -                         | -             | -       | -                  | -       |              |
| PL                         | 24  | 323%                      | 322%          | 7,8     | 322%               | 7,8     |              |
| PT                         | 18  | 49%                       | 48%           | -1,6    | 56%                | -1,3    |              |
| RO                         | 3   | 151%                      | 150%          | 0,1     | 150%               | 0,1     |              |
| SK                         | 8   | 258%                      | 259%          | 0,9     | 259%               | 0,9     |              |
| SI                         | 3   | 152%                      | 148%          | 0,2     | 148%               | 0,2     |              |
| ES                         | 16  | 141%                      | 139%          | 2,9     | 139%               | 2,9     |              |
| SE                         | 14  | 187%                      | 172%          | 26,1    | 172%               | 26,1    |              |
| UK                         | 9   | 91%                       | 92%           | -2,3    | 92%                | -2,3    |              |

TABLE 26: SCR RATIOS AND SURPLUS AT YE11 UNDER A VB APPROACH

For the life sub-sample (including composites), the overall picture is similar. The number of undertakings not covering the SCR is significantly higher than the numbers shown on a YE09 or YE04 basis (presented below). This is explained by business models which were assuming higher yields – independently of the market volatility – than those experienced since a few years. This shows that the VB measure has not been designed to replace a transitional targeting these business models. For 2009 and 2004<sup>21</sup>, the country layer would have been triggered in a couple of countries with no material impact.

optimal as it includes a non-relevant extrapolation approach and no MA which has significant impact of several member states.

<sup>21</sup> Historical data is not available for all countries.



| End 2011 VB - Life business (including composites) |     |                           |                |          |               |         |              |
|--|-----|---------------------------|----------------|----------|---------------|---------|--------------|
| Country  | #   | Reported (scen1 - 100bps) | SCR (Currency) | Surplu s | SCR (Country) | Surplus | # < 100% SCR |
| EU   | 213 | 133%                      | 138%           | 75,3     | 140%          | 78,4    | 56           |
| AT   | 19  | 140%                      | 167%           | 4,1      | 167%          | 4,1     |              |
| BE   | 7   | 104%                      | 149%           | 3,7      | 149%          | 3,7     |              |
| BG   | 2   | -                         | -              | -        | -             | -       |              |
| CY   | 4   | 198%                      | 216%           | 0,2      | 238%          | 0,2     |              |
| DK   | 8   | 354%                      | 201%           | 3,9      | 201%          | 3,9     |              |
| EE   | 3   | 314%                      | 301%           | 0,1      | 301%          | 0,1     |              |
| FI   | 4   | 120%                      | 112%           | 0,3      | 112%          | 0,3     |              |
| FR   | 19  | 148%                      | 152%           | 19,3     | 152%          | 19,3    |              |
| DE   | 34  | 113%                      | 107%           | 2,4      | 107%          | 2,4     |              |
| GR   | 10  | -19%                      | -39%           | -2,0     | 15%           | -1,2    |              |
| IE   | 2   | -                         | -              | -        | -             | -       |              |
| IT   | 17  | 132%                      | 158%           | 12,9     | 168%          | 15,0    |              |
| LI   |     | -                         | -              | -        | -             | -       |              |
| LT   | 3   | 217%                      | 258%           | 0,1      | 258%          | 0,1     |              |
| LU   | 4   | 165%                      | 199%           | 0,3      | 199%          | 0,3     |              |
| MT   | 3   | 206%                      | 230%           | 0,1      | 240%          | 0,1     |              |
| NL   | 7   | 145%                      | 217%           | 11,1     | 217%          | 11,1    |              |
| NO   | 1   | -                         | -              | -        | -             | -       |              |
| PL   | 12  | 380%                      | 385%           | 4,0      | 385%          | 4,0     |              |
| PT   | 7   | 27%                       | 26%            | -1,6     | 36%           | -1,4    |              |
| RO   | 2   | -                         | -              | -        | -             | -       |              |
| SK   | 8   | 258%                      | 259%           | 0,9      | 259%          | 0,9     |              |
| SI   | 3   | 152%                      | 148%           | 0,2      | 148%          | 0,2     |              |
| ES   | 12  | 90%                       | 86%            | -0,8     | 86%           | -0,8    |              |
| SE   | 11  | 172%                      | 155%           | 17,8     | 155%          | 17,8    |              |
| UK   | 9   | 91%                       | 91%            | -2,3     | 91%           | -2,3    |              |

TABLE 27: SCR RATIOS AND SURPLUS AT YE11 UNDER A VB APPROACH – LIFE (INCLUDING COMPOSITES)

| End 2009 & 2004 VB - Life business (including composites) |      |                            |           |                      |                 |      |                          |           |                      |                 |
|---|------|----------------------------|-----------|----------------------|-----------------|------|--------------------------|-----------|----------------------|-----------------|
| Country   | # UT | Reported (scen10 - 100bps) | VB (YE09) | Surplus (YE09, BN €) | # UT < 100% SCR | # UT | Reported (scen12 - 0bps) | VB (YE04) | Surplus (YE04, BN €) | # UT < 100% SCR |
| EU  | 137  | 192%                       | 211%      | 155,5                | 13              | 133  | 196%                     | 198%      | 159,8                | 18              |
| AT  | 4    | 225%                       | 236%      | 2,4                  |                 | 4    | 190%                     | 192%      | 2,4                  |                 |
| BE  | 5    | 180%                       | 258%      | 8,7                  |                 | 6    | 232%                     | 229%      | 10,3                 |                 |
| BG  | 1    | -                          | -         | -                    |                 | 1    | -                        | -         | -                    |                 |
| CY  | 2    | -                          | -         | -                    |                 | 2    | -                        | -         | -                    |                 |
| DK  | 0    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |

| End 2009 & 2004 VB - Life business (including composites) |      |                            |           |                      |                 |      |                          |           |                      |                 |
|---|------|----------------------------|-----------|----------------------|-----------------|------|--------------------------|-----------|----------------------|-----------------|
| Country   | # UT | Reported (scen10 - 100bps) | VB (YE09) | Surplus (YE09, BN €) | # UT < 100% SCR | # UT | Reported (scen12 - 0bps) | VB (YE04) | Surplus (YE04, BN €) | # UT < 100% SCR |
| EE  | 0    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |
| FI  | 4    | 190%                       | 178%      | 2,0                  |                 | 3    | 124%                     | 124%      | 0,6                  |                 |
| FR  | 19   | 211%                       | 244%      | 39,5                 |                 | 18   | 243%                     | 240%      | 45,5                 |                 |
| DE  | 21   | 213%                       | 270%      | 17,5                 |                 | 20   | 204%                     | 193%      | 14,8                 |                 |
| GR  | 5    | 111%                       | 100%      | 0,0                  |                 | 4    | 107%                     | 107%      | 0,1                  |                 |
| IE  | 2    | -                          | -         | -                    |                 | 2    | -                        | -         | -                    |                 |
| IT  | 14   | 238%                       | 292%      | 36,9                 |                 | 16   | 265%                     | 268%      | 39,0                 |                 |
| LI  | 0    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |
| LT  | 2    | -                          | -         | -                    |                 | 2    | -                        | -         | -                    |                 |
| LU  | 0    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |
| MT  | 3    | 205%                       | 207%      | 0,1                  |                 | 3    | 201%                     | 202%      | 0,1                  |                 |
| NL  | 5    | 203%                       | 287%      | 14,5                 |                 | 5    | 198%                     | 211%      | 13,5                 |                 |
| NO  | 1    | -                          | -         | -                    |                 | 1    | -                        | -         | -                    |                 |
| PL  | 12   | 382%                       | 385%      | 4,0                  |                 | 10   | 405%                     | 406%      | 3,1                  |                 |
| PT  | 5    | 125%                       | 121%      | 0,4                  |                 | 5    | 140%                     | 141%      | 0,8                  |                 |
| RO  | 2    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |
| SK  | 0    | -                          | -         | -                    |                 |      | -                        | -         | -                    |                 |
| SI  | 2    | -                          | -         | -                    |                 | 2    | -                        | -         | -                    |                 |
| ES  | 10   | 162%                       | 166%      | 2,9                  |                 | 10   | 182%                     | 186%      | 4,1                  |                 |
| SE  | 10   | 204%                       | 186%      | 26,3                 |                 | 10   | 173%                     | 174%      | 22,0                 |                 |
| UK  | 7    | 101%                       | 92%       | -1,8                 |                 | 8    | 114%                     | 108%      | 2,1                  |                 |

TABLE 28: SCR RATIOS AND SURPLUS AT YE09 AND YE04 UNDER A VB APPROACH – LIFE (INCLUDING COMPOSITES)

## 10.2. Impact of the Transitional measures

### Recap of EIOPA's advice on Transitional measures

EIOPA advises to implement transitional measures as part of the LTG package. In order to make these measures available for a broader application, EIOPA also advises to compliment the tested measure (referred to as the “dynamic” Transitional in this section) with a second measure that is able to address further issues also related to the different valuation of technical provisions under Solvency I versus Solvency II (referred to as the “static” Transitional in this section). Both approaches follow the principles defined by EIOPA and need to be accompanied by strong supervisory review elements.



### *Approach chosen for this impact assessment*

All presented analysis on the Transitional measures is based on the LTGA scenario 2 sample consisting of 358 undertakings<sup>22</sup>. The impact of both proposed Transitional measures, the Static and the Dynamic version, is analysed based on the provided LTGA results for that scenario. No further assumptions needed to be made by EIOPA. Scenario 2 was used as a base because it is the closest to the non-application of a CCP.

For the entire analysis, it was assumed that either the Static or the Dynamic transitional would apply, but not both at once. Also, all results are based on YE11 data only and assuming to be 0 years into the transition process.

It should be noted that out of the scenario 2 sample, 39 undertakings that “needed” a transitional at YE11 (i.e. SCR ratio < 100%) would have seen a positive impact on their SCR ratio from both Transitional measures. 21 undertakings that “needed” a transitional would have seen a positive impact from the static measure only and 22 from the dynamic measure only. However, the number of undertakings being able to apply the dynamic measure might be higher in reality as some LTGA participants might have not been able to provide scenario 8 results for various reasons (e.g. technical/ resource issues, eligibility issues as for cross-border business, etc.) which are the basis for the below analysis on the dynamic transitional measure. It should further be recalled that the application of the transitional measures would not be mandatory and need supervisory approval.

#### *“Static” Transitional impact analysis*

As described earlier in this report, the “static” transitional measure (STrans) is based on determining the delta of Technical Provisions (TP) between the SI TP and the SII TP at SII inception. This delta is then added as a “Special” Own Funds item to the Eligible Own Funds of the respective insurer in case the application of the measure is approved by the relevant NSA. This item is then linearly reduced over time and potentially adjusted in regular intervals in case the SII risk-free rate moves significantly away from its level at inception of SII.

The below table provides results for two different application scenarios of STrans: (block A) the measure is applied to all undertakings that would have profited from the measure at YE11 (i.e. TP SI is lower than TP scenario 2), and (block B) the measure is applied only to undertakings that would have needed the measure at YE11 (i.e. SCR ratio without the measure is below 100%). All SCR ratios presented are weighted average ratios based on overall Eligible Own Funds over overall SCR for the respective markets.

Member States marked in light blue in blocks A and B would have had one or more undertakings in the LTGA sample applying the measure at YE11.

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<sup>22</sup> LTGA scenario 2 is based on YE11 data, applying a CCP of 50bps, applying a MA and applying the 20+10 extrapolation approach. It should be noted that for some countries, e.g. HU, the scenario 2 sample is not very representative.



| Scen 2 as tested             |           |             |     | A: Scen 2 w/ STrans for all |           |             |             | B: Scen 2 w/ STrans if needed |             |  |             |
|------------------------------|-----------|-------------|-----|-----------------------------|-----------|-------------|-------------|-------------------------------|-------------|--|-------------|
| MS                           | SCR ratio | SCR surplus | #UT | MS                          | SCR ratio | SCR surplus | MS          | SCR ratio                     | SCR surplus |  |             |
| AT                           | 171%      | 7,376,358   | 22  | AT                          | 180%      | 8,419,886   | AT          | 180%                          | 8,407,927   |  |             |
| BE                           | 98%       | 197,602     | 8   | BE                          | 124%      | 2,964,107   | BE          | 108%                          | 989,406     |  |             |
| BG                           | 245%      | 27,629      | 3   | BG                          | 245%      | 27,629      | BG          | 245%                          | 27,629      |  |             |
| CY                           | 157%      | 199,815     | 14  | CY                          | 157%      | 199,815     | CY          | 157%                          | 199,815     |  |             |
| DE                           | 129%      | 19,806,774  | 57  | DE                          | 175%      | 51,723,075  | DE          | 146%                          | 31,582,026  |  |             |
| DK                           | 244%      | 5,998,641   | 11  | DK                          | 258%      | 6,564,818   | DK          | 244%                          | 5,998,641   |  |             |
| EE                           | 293%      | 143,600     | 3   | EE                          | 293%      | 143,600     | EE          | 293%                          | 143,600     |  |             |
| ES                           | 126%      | 2,378,773   | 21  | ES                          | 143%      | 3,987,481   | ES          | 142%                          | 3,914,400   |  |             |
| FI                           | 134%      | 1,579,320   | 7   | FI                          | 146%      | 2,124,909   | FI          | 145%                          | 2,073,086   |  |             |
| FR                           | 127%      | 17,415,959  | 31  | FR                          | 138%      | 24,305,929  | FR          | 130%                          | 19,026,980  |  |             |
| GR                           | -18%      | 2,105,910   | 13  | GR                          | -12%      | 1,992,602   | GR          | -12%                          | 1,992,602   |  |             |
| HU                           | 70%       | 12,794      | 4   | HU                          | 70%       | 12,794      | HU          | 70%                           | 12,794      |  |             |
| IE                           | 49%       | 3,185,145   | 5   | IE                          | 74%       | 1,619,513   | IE          | 74%                           | 1,619,513   |  |             |
| IT                           | 121%      | 5,919,140   | 17  | IT                          | 122%      | 6,267,557   | IT          | 122%                          | 6,267,557   |  |             |
| LI                           | 140%      | 111,659     | 6   | LI                          | 144%      | 121,055     | LI          | 144%                          | 121,055     |  |             |
| LT                           | 230%      | 47,414      | 3   | LT                          | 233%      | 48,583      | LT          | 230%                          | 47,414      |  |             |
| LU                           | 132%      | 725,095     | 5   | LU                          | 136%      | 823,210     | LU          | 134%                          | 761,664     |  |             |
| MT                           | 219%      | 70,447      | 3   | MT                          | 219%      | 70,447      | MT          | 219%                          | 70,447      |  |             |
| NL                           | 132%      | 6,000,405   | 14  | NL                          | 163%      | 11,894,894  | NL          | 144%                          | 8,407,300   |  |             |
| NO                           | 113%      | 929,332     | 4   | NO                          | 159%      | 4,070,382   | NO          | 151%                          | 3,519,548   |  |             |
| PL                           | 304%      | 7,782,680   | 35  | PL                          | 304%      | 7,782,680   | PL          | 304%                          | 7,782,680   |  |             |
| PT                           | 54%       | 1,858,218   | 27  | PT                          | 63%       | 1,507,535   | PT          | 63%                           | 1,520,272   |  |             |
| RO                           | 141%      | 92,161      | 4   | RO                          | 141%      | 92,161      | RO          | 141%                          | 92,161      |  |             |
| SE                           | 176%      | 28,400,444  | 15  | SE                          | 176%      | 28,487,694  | SE          | 176%                          | 28,487,694  |  |             |
| SI                           | 148%      | 238,700     | 4   | SI                          | 148%      | 238,700     | SI          | 148%                          | 238,700     |  |             |
| SK                           | 243%      | 918,113     | 11  | SK                          | 243%      | 918,113     | SK          | 243%                          | 918,113     |  |             |
| UK                           | 84%       | 6,599,914   | 12  | UK                          | 139%      | 15,658,983  | UK          | 108%                          | 3,266,117   |  |             |
|                              |           |             | 359 |                             |           |             | 171,803,265 |                               |             |  | 127,198,778 |
| % UT with SCR ratio <100%    |           |             | 34% |                             |           |             | 26%         |                               |             |  | 26%         |
| Number of UT applying STrans |           |             | 0   |                             |           |             | 100         |                               |             |  | 60          |
| of which ...                 |           |             |     |                             |           |             |             |                               |             |  |             |
| Composite                    |           |             | 0   |                             |           |             | 12          |                               |             |  | 8           |
| Life                         |           |             | 0   |                             |           |             | 72          |                               |             |  | 45          |
| Non-Life                     |           |             | 0   |                             |           |             | 13          |                               |             |  | 5           |
| Reinsurance                  |           |             | 0   |                             |           |             | 3           |                               |             |  | 2           |

**TABLE 29: "STATIC" TRANSITIONAL IMPACT ANALYSIS BASED ON LTGA SCENARIO 2 AT YE11**

The conducted analysis shows that the application of the static transitional measure would have reduced the number of undertakings not meeting the 100% SCR ratio by 8 percentage points to 26% of the total scenario 2 sample (358 undertakings) at YE11. 53 out of 60 STrans applicants that "needed" the measure at YE11 (i.e. block B) are life or composite undertakings. The two reinsurance undertakings assumed to apply the measure in block B are life reinsurers, and at least 3 out of the 5 non-life undertakings are focussed on health similar to life business.

*"Dynamic" Transitional impact analysis*

The "dynamic" transitional measure (DTrans) is based on the difference between the SI discount rates for TP and the SII discount rates for TP. Thereby, the SI discount rates relate to the discount rates relevant at inception of SII. Using the OF adjustment approach at year 0 into the transition, the TP delta is calculated between applying the SI rates and applying the SII rates. This delta is then added as a "Special" Own Funds item to the Eligible Own Funds of the respective insurer in case the application of the measure is approved by the relevant NSA. This item is dynamically adjusted annually by increasing the weight of the SII rates relative to the SI rates.

For the presented analysis, the following shortcut was applied which should, however, provide the exact same results as the actual approach: The SII rates applied are the rates of LTGA scenario 2. But for simplification reasons, only the TP of scenario 2 was used and compared to the TP of scenario 8 where undertakings have provided results for scenario 8. For all other undertakings, it was assumed that they are not able to apply the dynamic transitional.<sup>23</sup>

Again, the below table provides results for two different application scenarios of DTrans: (block A) the measure is applied to all undertakings that would have profited from the measure at YE11 (i.e. TP scenario 8 is lower than TP scenario 2), and (block B) the measure is applied only to undertakings that would have needed the measure at YE11 (i.e. SCR ratio without the measure is below 100%). All SCR ratios presented are weighted average ratios based on overall Eligible Own Funds over overall SCR for the respective markets.

| Scen 2 as tested             |           |             |     | A: Scen 2 w/ DTrans for all |           |             |     | B: Scen 2 w/ DTrans if needed |             |  |  |
|------------------------------|-----------|-------------|-----|-----------------------------|-----------|-------------|-----|-------------------------------|-------------|--|--|
| MS                           | SCR ratio | SCR surplus | #UT | MS                          | SCR ratio | SCR surplus | MS  | SCR ratio                     | SCR surplus |  |  |
| AT                           | 171%      | 7,376,358   | 22  | AT                          | 173%      | 7,590,390   | AT  | 172%                          | 7,490,491   |  |  |
| BE                           | 98%       | 197,602     | 8   | BE                          | 98%       | 197,602     | BE  | 98%                           | 197,602     |  |  |
| BG                           | 245%      | 27,629      | 3   | BG                          | 259%      | 30,258      | BG  | 245%                          | 27,629      |  |  |
| CY                           | 157%      | 199,815     | 14  | CY                          | 182%      | 285,305     | CY  | 157%                          | 199,815     |  |  |
| DE                           | 129%      | 19,806,774  | 57  | DE                          | 141%      | 28,451,890  | DE  | 136%                          | 25,026,574  |  |  |
| DK                           | 244%      | 5,998,641   | 11  | DK                          | 244%      | 5,999,357   | DK  | 244%                          | 5,998,641   |  |  |
| EE                           | 293%      | 143,600     | 3   | EE                          | 302%      | 149,877     | EE  | 302%                          | 149,877     |  |  |
| ES                           | 126%      | 2,378,773   | 21  | ES                          | 163%      | 5,908,348   | ES  | 155%                          | 5,124,918   |  |  |
| FI                           | 134%      | 1,579,320   | 7   | FI                          | 159%      | 2,693,449   | FI  | 145%                          | 2,070,371   |  |  |
| FR                           | 127%      | 17,415,959  | 31  | FR                          | 128%      | 17,762,520  | FR  | 127%                          | 17,415,959  |  |  |
| GR                           | -18%      | 2,105,910   | 13  | GR                          | 7%        | 1,650,725   | GR  | 2%                            | 1,737,586   |  |  |
| HU                           | 70%       | 12,794      | 4   | HU                          | 70%       | 12,794      | HU  | 70%                           | 12,794      |  |  |
| IE                           | 49%       | 3,185,145   | 5   | IE                          | 52%       | 2,962,558   | IE  | 49%                           | 3,185,145   |  |  |
| IT                           | 121%      | 5,919,140   | 17  | IT                          | 124%      | 6,601,252   | IT  | 123%                          | 6,500,152   |  |  |
| LI                           | 140%      | 111,659     | 6   | LI                          | 140%      | 111,659     | LI  | 140%                          | 111,659     |  |  |
| LT                           | 230%      | 47,414      | 3   | LT                          | 230%      | 47,414      | LT  | 230%                          | 47,414      |  |  |
| LU                           | 132%      | 725,095     | 5   | LU                          | 152%      | 1,186,866   | LU  | 132%                          | 725,095     |  |  |
| MT                           | 219%      | 70,447      | 3   | MT                          | 219%      | 70,447      | MT  | 219%                          | 70,447      |  |  |
| NL                           | 132%      | 6,000,405   | 14  | NL                          | 135%      | 6,693,643   | NL  | 132%                          | 6,028,092   |  |  |
| NO                           | 113%      | 929,332     | 4   | NO                          | 113%      | 929,332     | NO  | 113%                          | 929,332     |  |  |
| PL                           | 304%      | 7,782,680   | 35  | PL                          | 305%      | 7,786,991   | PL  | 304%                          | 7,784,042   |  |  |
| PT                           | 54%       | 1,858,218   | 27  | PT                          | 65%       | 1,442,632   | PT  | 63%                           | 1,511,190   |  |  |
| RO                           | 141%      | 92,161      | 4   | RO                          | 141%      | 92,161      | RO  | 141%                          | 92,161      |  |  |
| SE                           | 176%      | 28,400,444  | 15  | SE                          | 176%      | 28,400,444  | SE  | 176%                          | 28,400,444  |  |  |
| SI                           | 148%      | 238,700     | 4   | SI                          | 159%      | 296,512     | SI  | 150%                          | 248,705     |  |  |
| SK                           | 243%      | 918,113     | 11  | SK                          | 243%      | 918,113     | SK  | 243%                          | 918,113     |  |  |
| UK                           | 84%       | 6,599,914   | 12  | UK                          | 101%      | 553,203     | UK  | 89%                           | 4,284,071   |  |  |
|                              |           | 92,202,876  | 359 |                             |           | 116,293,118 |     |                               | 104,431,544 |  |  |
| % UT with SCR ratio <100%    |           |             | 34% |                             |           |             | 30% |                               | 30%         |  |  |
| Number of UT applying DTrans |           |             | 0   |                             |           | 123         |     |                               | 61          |  |  |
| of which ...                 |           |             |     |                             |           |             |     |                               |             |  |  |
| Composite                    |           |             | 0   |                             |           | 16          |     |                               | 7           |  |  |
| Life                         |           |             | 0   |                             |           | 77          |     |                               | 46          |  |  |
| Non-Life                     |           |             | 0   |                             |           | 26          |     |                               | 8           |  |  |
| Reinsurance                  |           |             | 0   |                             |           | 4           |     |                               | 0           |  |  |

TABLE 30: "DYNAMIC" TRANSITIONAL IMPACT ANALYSIS BASED ON LTGA SCENARIO 2 (YE11)

<sup>23</sup> It should be noted that this is assumption likely not correct for some countries where undertakings in the sample did not provide scenario 8 results though scenario 8 could have been applied in the market, e.g. BE.



The conducted analysis shows that the application of the dynamic transitional measure would have reduced the number of undertakings not meeting the 100% SCR ratio by 4 percentage points to 30% of the total scenario 2 sample at YE11. 53 out of 61 DTrans applicants that “need” the measure (i.e. block B) are life or composite undertakings.

### 10.3. Impact of the inclusion of immaterial mortality risk for the MA

#### *Recap of EIOPA’s advice on the MA with regards to immaterial mortality risk*

EIOPA advises to implement the “classical” Matching Adjustment as foreseen by the legislators, including the strict criteria relating to CQS 3 investments (i.e. the 33% portfolio limit excluding government bonds and the MA cap). Furthermore, EIOPA suggests minor amendments to the measure including the inclusion of immaterial mortality risk.

Ad hoc calculations to manage and control this immateriality in a prudent and sound manner will be necessary as well as appropriate Pillar 2 requirements regarding liquidity risks and the relevant features of the portfolios of insurance obligations.

An appropriate method to test the immateriality of the mortality risk which, however, would need to be further investigated by EIOPA could be the following one:

$$\frac{\text{Deviation of the mortality risk}}{\text{BE}}$$

Where

- Deviation of the mortality risk is calculated as follows by comparing the BE cash flows and BE cash flows after mortality shock<sup>24</sup>. Only unfavorable deviations (cash flow post shock > cash flow pre shock) should be taken into account. The current value of those unfavorable deviations would be calculated using the basis risk-free interest rate curve
- Best estimate (BE) is the best estimate liability in respect of the portfolio of matched obligations calculated using the basic risk interest rate curve.

With regards to the immateriality of the risk, EIOPA currently considers that the suggested ratio should have a value which is not exceeding 5%. However, further investigations on the exact calibration of the limit are needed. In addition, criteria on the minimum size of portfolios could potentially be added, as the predictability of mortality cash flows increases significantly with portfolio size.

#### *Approach chosen for this impact assessment*

Regarding the impact of including immaterial mortality risk in the MA application, it currently seems to have a noticeable impact only in a few Member State, e.g. DK and ES. Therefore, this impact analysis focusses on the quantitative impact for the Spanish market. However, it should be noted that EIOPA believes that eligible products will be

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<sup>24</sup> For the purpose of this assessment, the worst case scenario of those contemplated in the SCR standard formula has been applied, without aggregating risks, without allowing for any diversification benefits and without any adjustment for LAC of DT or TP. With this in mind and considering the average age of the portfolios analysed, the current assessment applies the 15% permanent shock prescribed for the deviation in the mortality rates, instead of the 0.15% 1-year shock prescribed for the life CAT submodule.



offered in other markets in the near future as well. In this light, also the inclusion of minor mortality risk seems important to increase the attractiveness of the products for consumers without increasing the risks (if mortality risk is truly immaterial).

As a background, current products sold in the Spanish market provide both survival and death benefits, where the exposure to mortality is very limited moving in a range of 80-107% of paid-in premiums.

The impact assessment has covered the entire Spanish scenario 1 sample of the LTGA. However, only 12 of the life insurance undertakings in the sample were impacted by the inclusion of immaterial mortality risk in the MA concept. Those 12 undertakings represent more than 60% of the whole life insurance market in Spain (based on YE11 technical provisions), although when referring specifically to long term insurance business, the market coverage raises to 73,5%.

The entire analysis was based on the scenario 1 outcome, however, the impact of the Extended MA was removed from the results of the 12 undertakings concerned before adding the CMA effect (including mortality risk) in order to avoid double counting.

### Impact on SCR

The introduction of the possibility of using the “classical” Matching Adjustment on products which include immaterial mortality risks would mean an increase in the weighted average final SCR ratio for the entire Spanish LTGA sample from 136% to 158% at YE11 (applying scenario 1 conditions as described above). Looking at the life market only, the ratio would move from 91% to 125%.

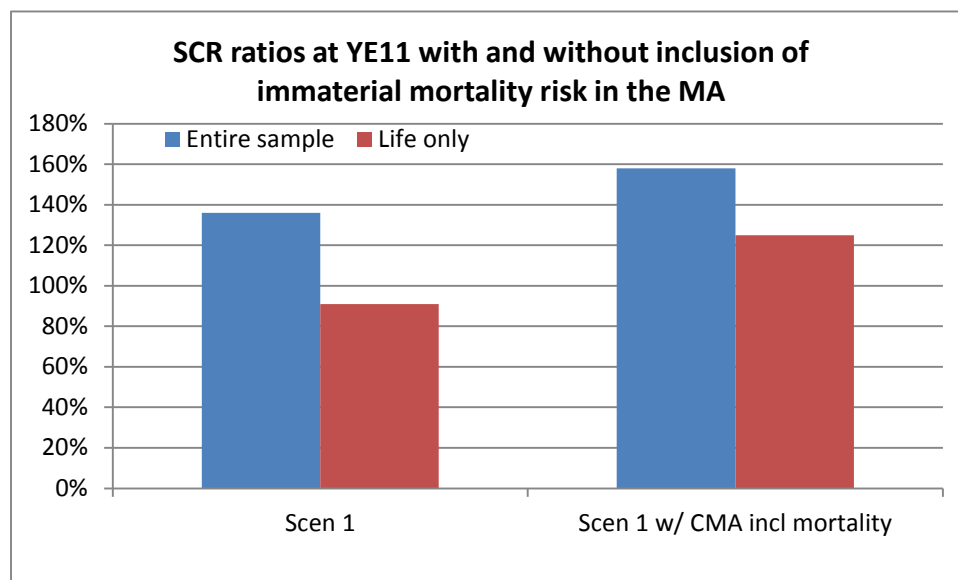


FIGURE 55: IMPACT OF INCLUDING IMMATERIAL MORTALITY RISK IN THE MA CONCEPT FOR THE SPANISH LTGA SAMPLE AT YE11

It is worth noting that under the framework tested in the LTGA (i.e. without allowing the “classical” Matching Adjustment on products which include any mortality coverage, even if the risk for the ALM strategy is immaterial), there were 6 undertakings out of the 12 Spanish participants subject to this impact assessment which would not have covered their SCR (i.e. SCR ratio below 100%). The number of undertakings failing to cover the SCR is reduced to one in a scenario where it is possible to apply the CMA to products including immaterial mortality risks.

In terms of market share, while 44% of potential MA business would breach the SCR in case of CMA without allowance of immaterial mortality risk, only a 7% of market CMA business would still fail to cover the SCR if it were possible to apply the MA to products including mortality guarantees which represent immaterial risk for the ALM strategy.

### *Method to test the immateriality of mortality risk for the CMA purpose*

For this purpose it is important to keep a clear distinction between the SCR and the measurement of the immateriality of mortality risk:

- On one hand, the SCR mortality risk sub-modules is a pure Pillar 1 element aimed at assessing the impact on own funds of unexpected negative deviations of expected mortality rates considered in the calculation of the best estimates. Furthermore, SCR calculation is based on a modular approach where risks are stressed in isolation and the respective SCR for each risks aggregated using linear correlations.
- On the other hand, the test of immateriality of mortality risk is a metric aimed at assessing the materiality of the risk that deviations in the best estimate assumptions for the mortality cash flows may lead to the sale of assets managed under the ALM strategy imposed by the Matching Adjustment.

While SCR metric normally provides quite low values (even negative values in some cases), a more prudent approach is needed in order to assess to what extent mortality guarantees do not mean a material risk for MA portfolios due to unexpected negative deviations in mortality rates. It is important to point out that the aim of this specific metric is not to assess the impact on own funds.

It should be noted that deviations in mortality assumptions, unlike lapses for instance or other policyholder options, are not driven by the behaviour of the policyholder, the reputation of the undertaking or the specific economic environment. This facilitates the definition of a reliable measurement regarding the immateriality of mortality risk.

For this assessment (in line with the outlines earlier in the report), a prudent and simple approach was chosen based on comparing cash flows projected under the best estimate to cash flows projected under a prudently stressed scenario where mortality rates deviate:

- Shocks applied to the mortality assumptions are calibrated at 99.5% VaR.
- Only unfavorable deviations are taken into account, i.e. no compensation with favorable deviations is allowed.
- The future deviations are discounted to the valuation date at the basic risk-free rate, in order to avoid any reinvestment risk.

The metric is defined as a ratio between actual values of the sum of all future deviations of the mortality assumption (applying the shocks in the SF of the SCR) over the best estimate:

$$\frac{\text{Deviation of the mortality risk}}{\text{BE}}$$



The numerator of this ratio compares BE cash flows previous and after the mortality shock. Best estimate is the best estimate liability in respect of the portfolio of matched obligations.

The resulting ratios for the undertakings being part of this assessment move between 0.01% and 4.07%.

| Overview of results | Portfolio 2         | Portfolio 3          | Portfolio 5   |
|---------------------|---------------------|----------------------|---------------|
| Guaranteed capital  | 75%-105% of premium | 75%- 105% of premium | 80%-105% PU   |
| Cap                 | 6000                | 6000                 | 3000 (105%PU) |
| Portfolio size      | 8081                | 52492                | 106           |
| Average age         | 71.88               | 75.02                | 60.89         |
| Ratio               | 2.39%               | 3.11%                | 4.07%         |

TABLE 31: EXAMPLE PORTFOLIOS WITHIN THE IMPACT ASSESSMENT

The table above shows that characteristics of the portfolio such as its size and average age of risks influence the desirable threshold of the metric.

This analysis indicates that the reference approach together with the reference threshold of 5% seems to be a useful starting point to derive an appropriate way to assess the materiality of the mortality risk.